High Efficiency Decathlon (HD) Series Gas Fryers

Service & Parts Manual

Dean HD & SCFHD,
Frymaster FPHD Models

(Includes HD63/Red Robin and Common Cabinetry)

DEAN

Dean, a member of the Commercial Food Equipment Service Association, recommends using CFESA Certified Technicians.

MAY 2007

PRINTED IN THE UNITED STATES OF AMERICA

24-Hour Service Hotline
1-800-551-8633

8196314

Please read all sections of this manual and retain for future reference.

This product has been certified as commercial cooking equipment and MUST be installed by professional personnel as specified. Installation, maintenance and repairs should be performed by your FRYMASTER FACTORY AUTHORIZED SERVICE CENTER.

⚠ DANGER
Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other cooking appliance.

⚠ DANGER
Instructions explaining procedures to be followed MUST be posted in a prominent location in the event the operator detects a gas leak. This information can be obtained from the local gas company or gas supplier.

⚠ WARNING
Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating and maintenance instructions thoroughly before installing or servicing this equipment.

⚠ DANGER
Safe and satisfactory operation of your equipment depends on proper installation. Installation MUST conform with local codes, or in absence of local codes, with the National Fuel Gas Code, ANSI Z223.1; The Natural Gas Installation Code, CAN/CGA-B149.1; The Propane Installation Code, CAN/CGA-B149.2; or The latest edition of the National Electric Code, N.F.P.A. 70.

NOTICE
If, during the warranty period, the customer uses a part for this Enodis equipment other than an unmodified new or recycled part purchased directly from Frymaster and Dean, or any of its authorized service centers, and/or the part being used is modified from its original configuration, this warranty will be void. Further, Frymaster and Dean and its affiliates will not be liable for any claims, damages or expenses incurred by the customer which arise directly or indirectly, in whole or in part, due to the installation of any modified part and/or part received from an unauthorized service center.

⚠ DANGER
The crumb tray in fryers equipped with a filter system must be emptied into a fireproof container at the end of frying operations each day. Some food particles can spontaneously combust if left soaking in certain shortening material. Additional information can be obtained in the filtration manual included with the system.

⚠ DANGER
The front ledge of the fryer is not a step. Do not stand on the fryer. Serious injury can result from slips or contact with the hot oil.

⚠ WARNING

Drawings and photos used in this manual are intended to illustrate operational, cleaning and technical procedures and may not conform to on-site management operational procedures.

⚠ WARNING

No structural material on the fryer should be altered or removed to accommodate placement of the fryer under a hood. Questions? Call the Frymaster and Dean Service Hotline at 1-800-551-8633.

This equipment is to be installed in compliance with the basic plumbing code of The Building Officials and Code Administrators International, Inc. (BOCA) and the Food Service Sanitation Manual of the Food and Drug Administration.

COMPUTERS
FCC

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: 1) This device may not cause harmful interference, and 2) This device must accept any interference received, including interference that may cause undesired operation. While this device is a verified Class A device, it has been shown to meet the Class B limits.

CANADA

This digital apparatus does not exceed the Class A or B limits for radio noise emissions as set out by the ICES-003 standard of the Canadian Department of Communications.

Cet appareil numerique n'emet pas de bruits radioelectriques depassany les limites de classe A et B prescrites dans la norme NMB-003 edictee par le Ministre des Communcations du Canada.

⚠ DANGER

THIS PRODUCT CONTAINS CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND/OR BIRTH DEFECTS OR OTHER REPRODUCTIVE HARM.
Operation, installation, and servicing of this product could expose you to airborne particles of glasswool or ceramic fibers, crystalline silica, and/or carbon monoxide. Inhalation of airborne particles of glasswool or ceramic fibers is known to the State of California to cause cancer. Inhalation of carbon monoxide is known to the State of California to cause birth defects or other reproductive harm.

⚠ WARNING

Do not bang fry baskets or other utensils on the fryer's joiner strip. The strip is present to seal the joint between the fry vessels. Banging fry baskets on the strip to dislodge shortening will distort the strip, adversely affecting its fit. It is designed for a tight fit and should only be removed for cleaning.

DEAN

Decathlon Series Gas Fryers
Service and Parts Manual

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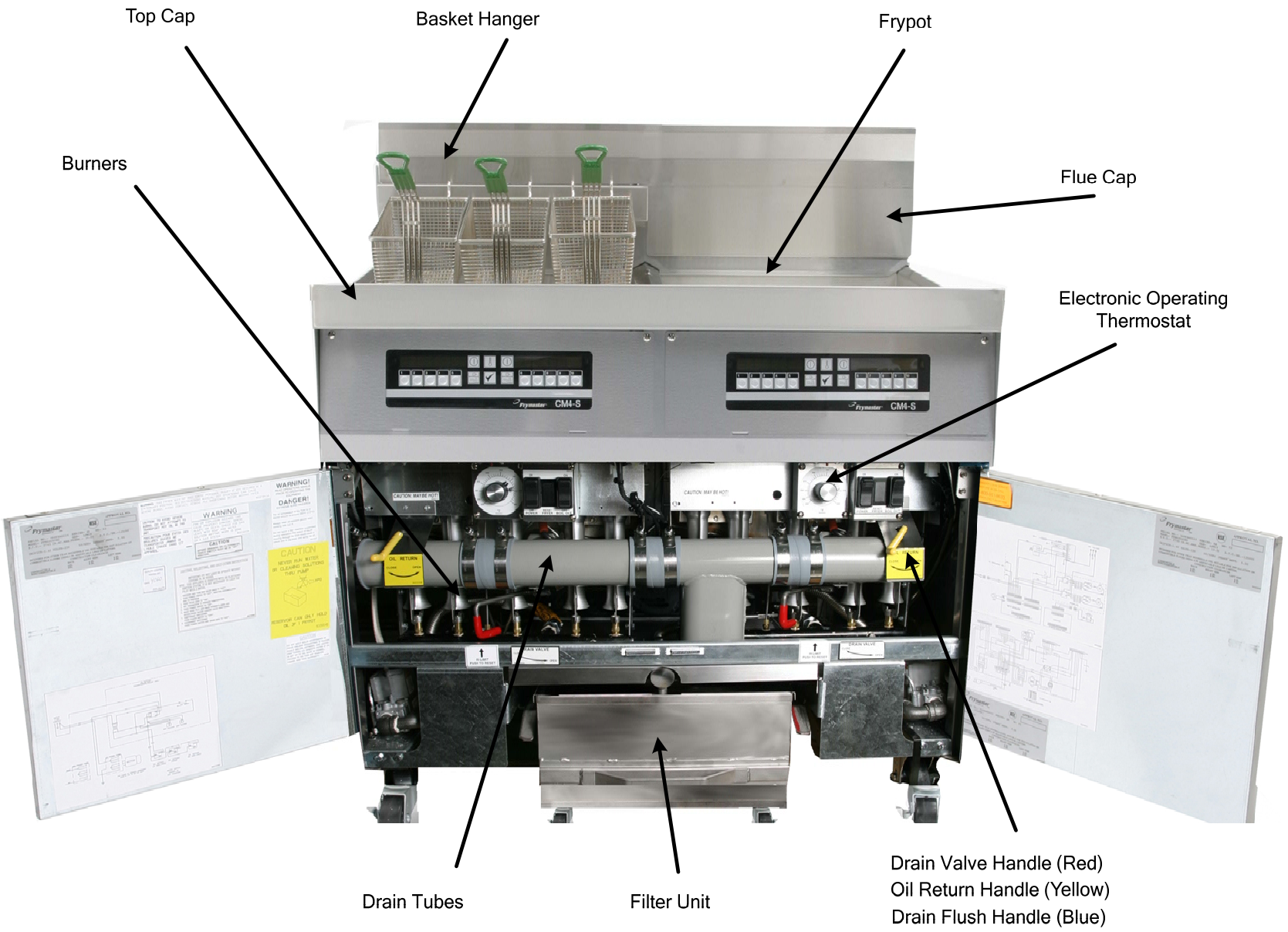
FINDING YOUR WAY AROUND THE DEAN HIGH EFFICIENCY DECATHLON



HIGH EFFICIENCY DECATHLON SERIES GAS FRYERS
CHAPTER 1: SERVICE PROCEDURES

1.1 Functional Description

High Efficiency Decathlon (HD) Series gas fryers contain a welded stainless steel frypot heated by gas flames diffused evenly through tubes built into the frypot.

Flames originate from orifices in a burner manifold positioned beneath stamped-steel burners. The burners are positioned in the tube openings at the front of the frypot. The diameter of the orifices differs for natural and LP gas as indicated in the accompanying table.

High efficiency burner and diffuser.

GAS INFORMATION (Altitudes of 2000 feet or less)

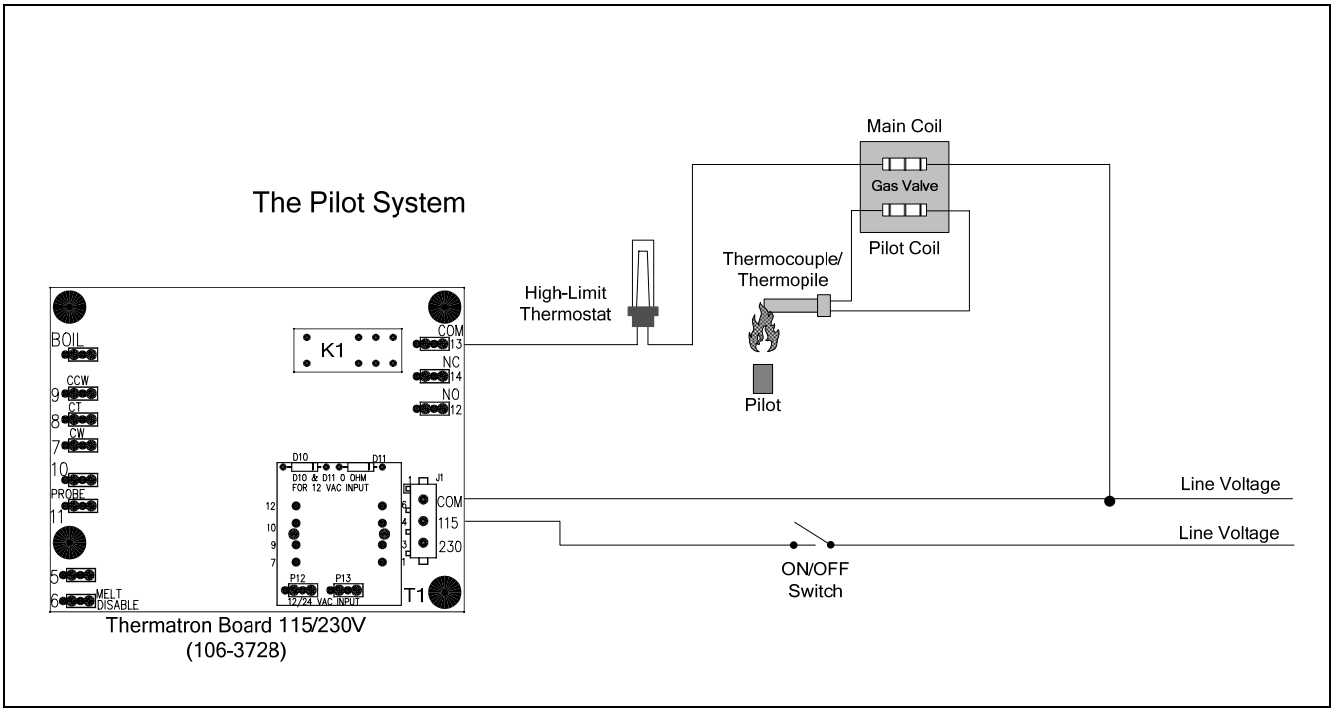
MODEL	INPUT (BTU)	GAS TYPE	ORIFICE MM (INCH)	ORIFICE PART NO.	QTY	EQUIPMENT PRESSURE	
						MBAR	INCH W.C.
HD50G	95	NAT LP	2.26(#43) 1.40(#54)	810-2938 810-2939	4 4	10 27.5	4 10
HD60G	125	NAT LP	2.26(#43) 1.40(#54)	810-2938 810-2939	5 5	10 27.5	4 10

An electromechanical gas valve regulates gas flow to the manifold. HD Series gas fryers are equipped with either a 24V valve system. Unit configurations include either a pilot ignition system or an electronic ignition system.

1.1 Functional Description (cont.)

Pilot System Configuration

The pilot system is comprised of the pilot orifice, pilot hood, and a thermopile (some systems incorporate a thermocouple). The pilot serves two purposes: light the burner and heat the thermopile. In operation, the thermopile is in contact with the pilot flame and generates millivolts. The millivolt output energizes the gas valve pilot coil, which in turn opens the pilot valve. If the pilot flame is extinguished, the gas valve pilot coil loses voltage and the pilot valve closes. The main valve of the gas valve will not open if the pilot valve is not open. The pilot flame must be manually lit when the fryer is first placed into operation. A separate 24V circuit, activated by the fryer ON/OFF switch, provides voltage through the Thermatron to the gas valve main coil, which opens the main valve.



Electronic Ignition Configuration

In units configured for electronic ignition, an ignition module connected to an ignitor assembly replaces the pilot system. The ignition module performs three important functions: It provides an ignition spark, supplies voltage to the gas valve, and proofs the pilot flame.

The module contains a 90-second time delay circuit and a coil that activates the gas valve. The ignitor assembly consists of a spark plug, a pilot, and a flame sensor element.

Electronic Ignition Configuration (cont.)

At start-up the ON/OFF switch is placed in the ON position, supplying 12 VDC to the heat control circuitry in the controller or computer and to one side of the heat relay coil on the interface board. If resistance in the temperature probe indicates the temperature in the frypot is below 180°F (82°C), the current flows through a melt cycle circuit where a timer switch alternately closes for 3 seconds and opens for 24 seconds. If the temperature is 180°F (82°C) or above, the current flows through a heat circuit, bypassing the timer switch. In either case, current is supplied to the other leg of the heat relay coil which then closes an electronic switch in the 24 VAC circuit to provide current to the ignition module. **NOTE:** The listed melt cycle times and exit temperature pertain to the Compu-Fry computer only.

Circuitry in the ignition module sends 24 VAC current to the gas valve via a normally closed high-limit switch and a drain safety switch. Simultaneously, the module causes the ignitor to spark for up to 90 seconds to light the pilot flame. A flame sensor verifies that the pilot is lit by measuring the flow of microamps through the flame. If the pilot does not light (or is extinguished), current to the ignition module is interrupted, preventing the main valve from opening, and the ignition module "locks out" until the power switch is turned OFF, then back ON.

A temperature probe monitors the temperature in the frypot. When the programmed setpoint temperature is reached, resistance in the probe causes the heat cycle circuitry in the controller to interrupt current flow through the heat relay. This in turn interrupts the 24 VAC current to the ignition module, resulting in closure of the gas valve.

NOTE: Unlike previous modules, microamp readings on these black modules will move up and down as the module pulses on and off and this is an indication that the module is functioning.

Control Options

HD Series gas fryers may be equipped with Thermatron controls or Compu-Fry computers.

In fryers equipped with Thermatron controls, the fryer is turned on and off by means of a rocker switch and the temperature is set by adjusting a potentiometer. An interface board is located in the component box (shield) behind the control panel (computer-equipped) or a Thermatron board is located in a component box inside the cabinet (Thermatron-equipped).

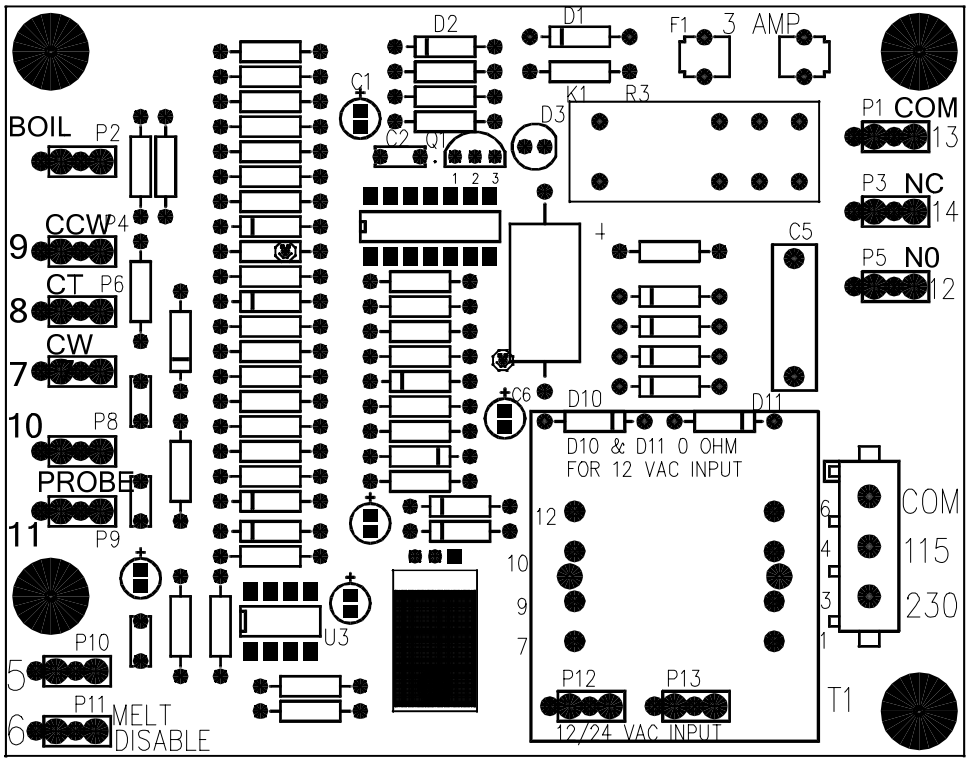
Interface Boards

The interface board provides a link between the controller/computer and the fryer's individual components without requiring excessive wiring, and allows the controller to execute commands from one central point. Two types of interface boards may be used in HD Series gas fryers; the type used depends on the fryer configuration.

In units configured for electronic ignition and constant pilot, P/N 106-6669 is used; in units configured with a manually lit pilot (non-electronic ignition), P/N 106-6710 is used.

Interface Boards (cont.)

826-2086 (115/230V): These boards are used in HD fryers equipped with Thermatron control systems.

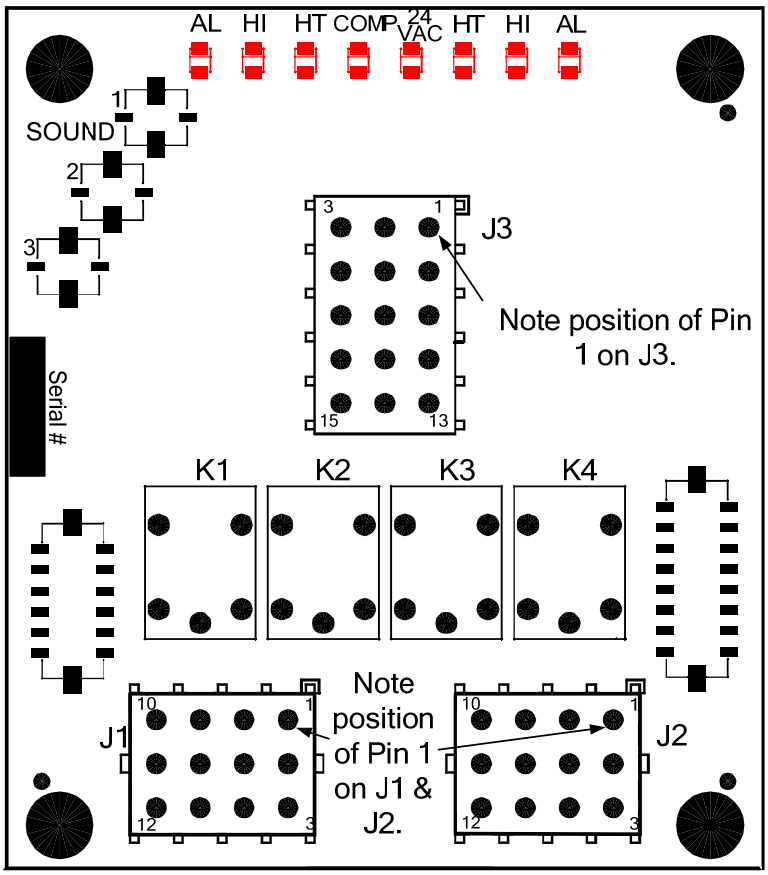


THERMATRON BOARD P/N 826-2086

Thermatron systems incorporate a temperature probe, a potentiometer, and a temperature control circuit board. This system is more accurate and reliable than a standard thermostat. The temperature probe measures oil temperature via resistance (ohms); as oil temperature rises, resistance decreases. The potentiometer sets the oil temperature via resistance (ohms). The temperature control circuit board compares the resistance from the probe and potentiometer and cycles the burner on and off as necessary.

Interface Boards (cont.)

826-2434: These interface boards are used in HD fryers equipped with electronic ignition and constant pilot.



INTERFACE BOARD P/N 106-6669 (Kit 826-2434)
Used on fryers equipped with electronic ignition and constant pilot.

Interface Boards (cont.)

FREQUENTLY USED TEST POINTS FOR HIGH EFFICIENCY DECATHLON (HD) FRYERS 106-6669 INTERFACE BOARD			
Test	**Meter Setting**	**Pins**	**Test Results**
12VAC Power to Controller	50 VAC Scale	1 and 3 on J3	12-18
12VDC Power to Right BL Relay	50 VDC Scale	4 on J2 and 5 on J2	12-18
12VDC Power to Left BL Relay	50 VDC Scale	7 on J1 and 5 on J2	12-18
24VAC Power to High-Limit	50 VAC Scale	6 on J2 and GROUND	22-28
24VAC Power	50 VAC Scale	2 on J2 and GROUND	22-28
24VAC Power To 24VAC Gas Valve	50 VAC Scale	7 on J2 and GROUND	22-28
Probe Resistance*	R x 1000 Ohms	10 and 11 on J2	**
*** Disconnect 15-pin harness from controller before testing probe circuit.**			
**** See Probe Resistance Chart at the end of this chapter.**			

HIGH EFFICIENCY DECATHLON (HD) FRYER LED DIAGNOSTIC LIGHTS (106-6669 INTERFACE BOARD)	
CMP	**Indicates power from 12V transformer.**
24V	**Indicates power from 24V transformer.**
HI	**Indicates output (closed) from latch relay (K4).**
HT	**Indicates output from heat relay (K3).**
AL	**Indicates output (open) from latch relay (K4).**

The board contains two heat relays (K2 and K3), and two basket lift relays (K1 and K4). *NOTE: On factory-original units not equipped with basket lifts and on service interface boards, the board will have no basket lift relays installed.*

Thermostats

Different types of thermostats are used in High Efficiency Decathlon Series gas fryers, depending on fryer configuration.

Fryers equipped with a ***Thermatron*** use a dial to adjust temperature. In this configuration, the probe resistance varies inversely with the temperature. *As the temperature rises, resistance decreases at a non-linear rate*. A chart is located at the end of this chapter.

Fryers equipped with computer controls have a ***temperature probe***. In this configuration, the probe resistance varies directly with the temperature. *As the temperature rises, resistance increases at a rate of approximately 2 ohms for every 1°F (approximately 3.7 ohms for every 1°C).* Circuitry in the computer monitors the probe resistance and controls burner firing when the resistance exceeds or falls below programmed temperatures (setpoints). The temperatures are programmed by means of a keypad on the face of the computer.

All HD Series gas fryers are equipped with a ***high-limit thermostat***. In the event that the fryer fails to control the oil temperature, the high-limit thermostat prevents the fryer from overheating to flash point. The high-limit thermostat acts as a normally closed power switch that opens when exposed to temperatures above 450°F/232°C.

1.2 Accessing Fryers for Servicing

⚠ DANGER
Moving a fryer filled with cooking oil may cause spilling or splattering of the hot liquid. Follow the draining instructions included with the fryer before attempting to relocate a fryer for servicing.

1. Shut off the gas supply to the unit. Unplug the power cords. Remove any attached restraining devices.
2. Disconnect the unit from the gas supply.
3. Relocate the fryer for service accessibility.
4. After servicing is complete, reconnect the unit to the gas supply, reattach restraining devices, and plug in the electrical cords.

⚠ DANGER
No structural material on the fryer should be altered or removed to accommodate placement of the fryer under a hood. Questions? Call the Frymaster Dean Service Hotline at 1-800-551-8633.

Restraints

Once the fryer has been positioned at the frying station, use a carpenter's level placed across the top of the frypot to verify that the unit is level, both side-to-side and front-to-back.

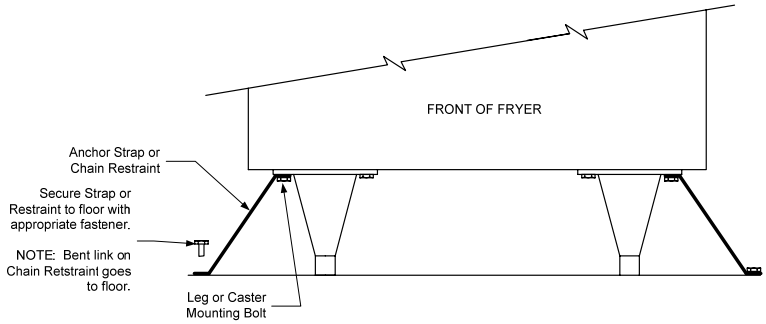
To level fryers equipped with legs, the bottom of the legs can be screwed out up to one inch for leveling. Legs should also be adjusted so that the fryer(s) are at the proper height in the frying station.

For fryers equipped with casters, there are no built-in leveling devices. The floor where the fryers are installed must be level.

When the fryer is leveled in its final position, install the restraints provided with the unit to limit its movement so that it does not depend on or transmit stress to the electrical conduit or connection. Install the restraints in accordance with the provided instructions (see illustration below). If the restraints are disconnected for service or other reasons, they must be reconnected before the fryer is used.

⚠ DANGER

Adequate means must be provided to limit the movement of this appliance without depending on or transmitting stress to electrical conduits or gas supply line. A restraint kit is provided with the fryer. If the restraint kit is missing contact your local Frymaster Factory Authorized Service Center (FASC) for part number 826-0900.


FRONT OF FRYER
Anchor Strap or Chain Restraint
Secure Strap or Restraint to floor with appropriate fastener.
NOTE: Bent link on Chain Retstraint goes to floor.
Leg or Caster Mounting Bolt

NOTE: If you need to relocate a fryer installed with legs, remove all weight from each leg before moving. If a leg becomes damaged, contact your service agent for immediate repair or replacement.

⚠ DANGER

Hot oil can cause severe burns. Avoid contact. Under all circumstances, oil must be removed from the fryer before attempting to move it to avoid oil spills, falls, and severe burns. This fryer may tip and cause personal injury if not secured in a stationary position.

1.3 Cleaning the Gas Valve Vent Tube (if applicable)

1. Set the fryer power switch and the gas valve to the OFF position.

2. Carefully unscrew the vent tube from the gas valve. **NOTE:** The vent tube may be straightened for ease in removal.

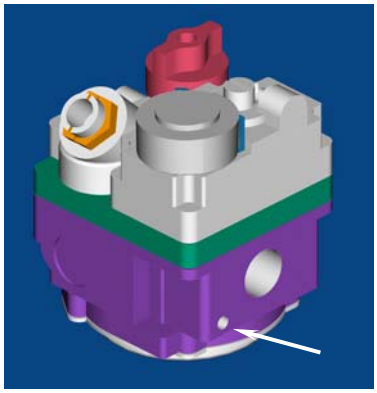
3. Pass a piece of ordinary binding wire (.052 inch diameter) through the tube to remove any obstruction. Remove the wire and blow through the tube to ensure it is clear.

4. Reinstall tube and bend so that the opening is pointing downward.

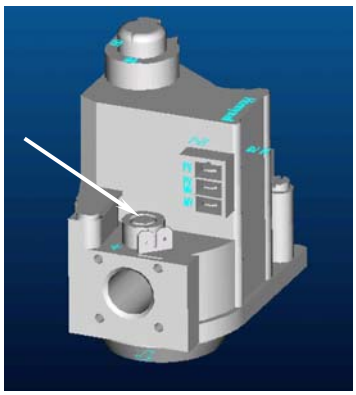
1.4 Adjusting Burner Manifold Gas Pressure

⚠ WARNING
This task should be performed by qualified service personnel only.

1. Ensure that the gas valve knob is in the OFF position.
2. Remove the pressure tap plug from the gas valve (see arrows in photos below for location).



Pilot Ignition Valve
(Line Voltage)



Electronic
Ignition Valve

3. Insert the manometer fitting into the pressure tap hole.
4. Place the gas valve in the ON position then place the fryer power switch in the ON position. When the burner lights and continues to burn, check the gas pressure reading against the table on page 1-1.
5. To adjust burner gas pressure, remove the cap from the gas valve regulator and adjust to correct pressure.
6. Place the fryer power switch and the gas valve in the OFF position. Remove the manometer fitting from the pressure tap hole and reinstall the pressure tap plug.

1.5 Adjusting the Pilot Flame

1.5.1 Main Pilot

1. Remove the cap from the pilot adjustment screw hole on the gas valve.
2. Using a small, flat-tipped screwdriver, turn the pilot adjusting screw counterclockwise to increase length of flame or clockwise to decrease length of flame. Adjust to obtain a flame from 1 inch to 1½ inches long.
3. Reinstall the pilot adjustment screw cap.

1.5.2 Trailing Pilot

Unlike older Decathlon units, current production HD units do not have a trailing pilot adjustment.

1.6 Calibrating the Thermatron

1. Fill the frypot to the lower OIL-LEVEL line with cooking oil. If solid shortening is used, it must be melted before starting the calibration procedure.
2. Ensure the fryer ON/OFF switch is in the OFF position and light the pilot.
3. Place the fryer ON/OFF switch in the ON position. Set the potentiometer dial to 325°F (162°C).
4. Allow the oil to equalize at setpoint temperature. This is evident when the burners have cycled on and off several times.
5. Insert a thermometer or pyrometer into the frypot within 3 inches of the probe bulb. Ensure the tip of the thermometer/pyrometer does not touch the frypot burner tube.
6. If the temperature on the thermometer is higher or lower than 325°F (162°C), the knob is out of calibration.
7. Calibrate the knob by first loosening the setscrew and slowly turning the knob to match the temperature reading of the thermometer. Tighten the setscrew, ensuring the knob does not move on the shaft during tightening.
8. Allow burners to cycle on and off several times, then recheck oil temperature as described in Step 5. If the thermostat dial temperature matches the thermometer temperature, the thermostat is calibrated. If not, repeat Step 7.

1.7 Replacing Fryer Components

1.7.1 Replacing the Computer

1. Disconnect the fryer from the electrical supply.

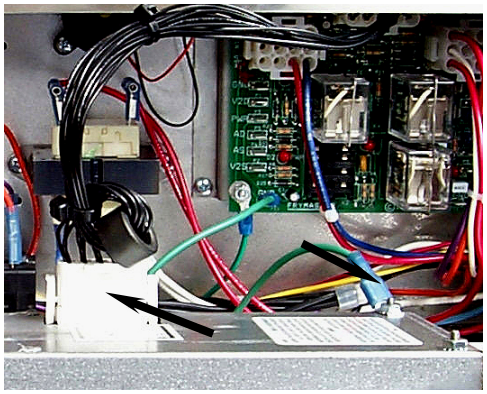
2. Unscrew the two computer panel screws. The computer panel is hinged at the bottom and will swing open from the top.

Computer panel in “down” position.

3. Unplug the fryer wiring harness and ground wire from the back of the computer.

4. Remove the computer by lifting it from the hinge slots in the fryer control panel frame.

5. Reverse the procedure to install a new computer.



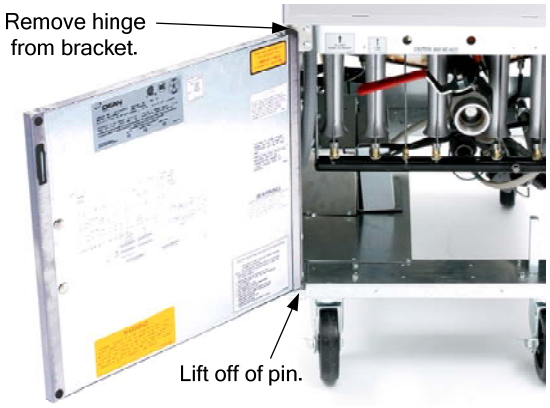
Disconnect the 15-pin connector and ground wire (arrows) from the computer.

1.7.3 Replacing the Temperature Probe; Computer-equipped Fryers

1. Disconnect the fryer from the electrical supply.

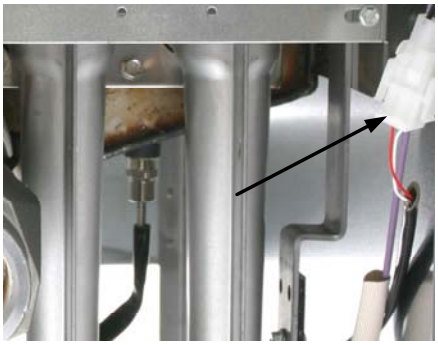
2. Drain cooking oil from the frypot. Allow the frypot to cool completely before proceeding.

3. Remove fryer door for easier access to the temperature probe. First, remove top hinge from bracket. Then, lift door off bottom hinge pin.



Remove the fryer door for easier access to the temperature probe.

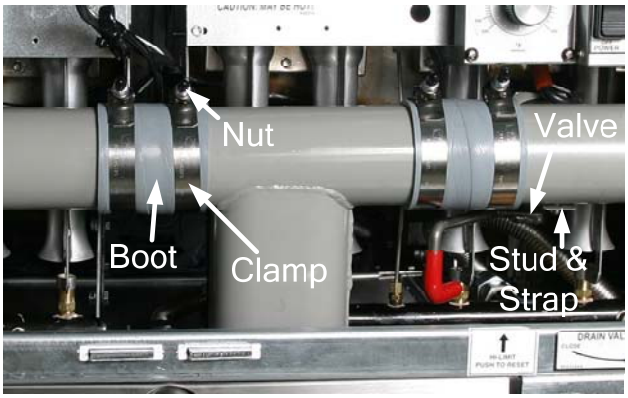
4. Disconnect the probe harness connector (arrow). Use a pin pusher to remove plug from probe wires (probe side only). Retain the plug for re-assembly on new probe.



Disconnect the two-pin probe harness connector (arrow).

5. Remove the drain manifold. Only the drain tubes directly blocking the frypot being replaced require removal.

   - Remove the nuts holding the drain valve strap onto the drain tube stud.
   - Disconnect the Teflon tube at the back of the center dump tube piece and any other components attached to the tubes, including drain flush flexlines.
   - Loosen the nut on each clamp holding the rubber boots and drain sections together.
   - Carefully remove the tubes by pulling down at an angle, straight out of the drain valves, and working them gently out of the rubber boots. Set aside for reassembly.

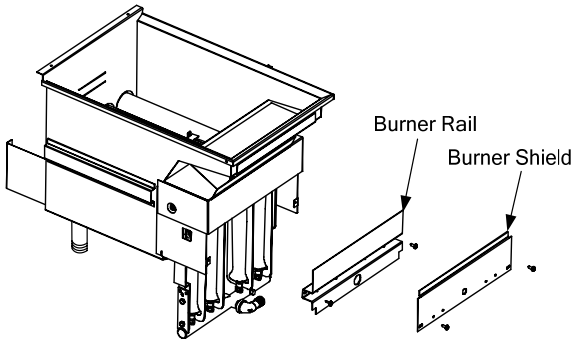


Remove the nuts, Teflon tube (not pictured), clamp, boot, and drain tubes.

1.7.3 Replacing the Temperature Probe; Computer-equipped Fryers (cont.)

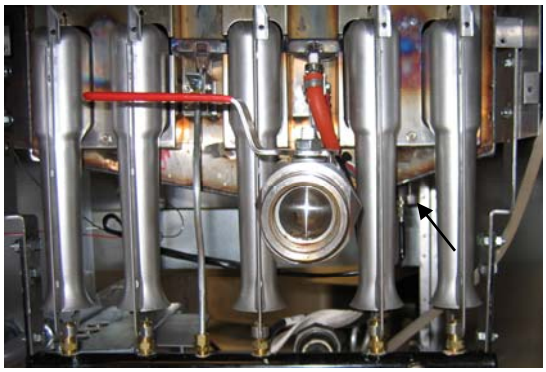
6. Remove the burner shield by loosening the screw on each end.

7. Remove the burner rail by loosening the screw on each end. The burner rail secures the burners in the burner manifold. Be careful to ensure that the burners do not fall out of the gas manifold, as they might be damaged and dented.



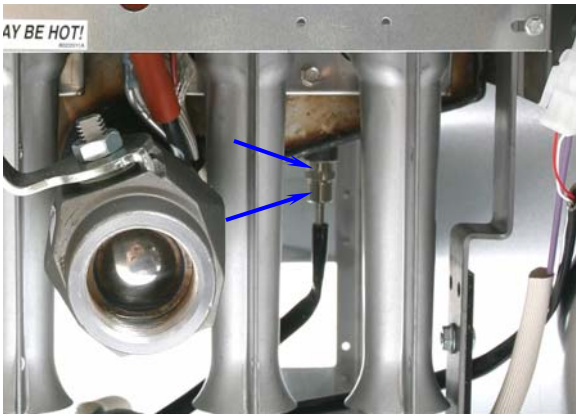
Remove the burner rail and burner shield.

8. Remove the burners to gain access to the temperature probe and to ease frypot removal. Lean each burner slightly away from the frypot to clear the burner seal (metal box attached to frypot). Then, pull the burner up and off of the orifice. The burners should be easy to remove and do not require force.



Remove burners to gain access to temperature probe (arrow).

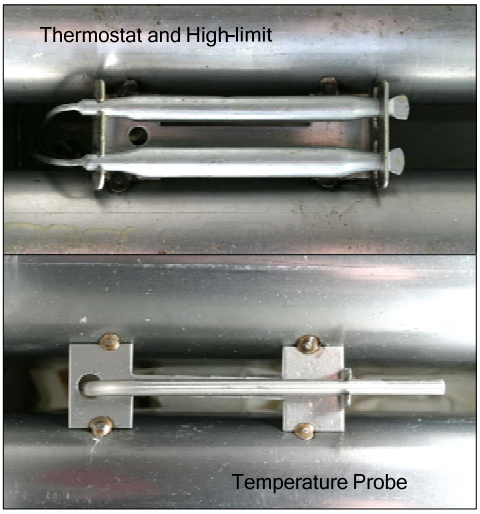
9. Loosen and unscrew the compression nut and the pass-through nut completely from the frypot. <u>Proceed to the next step before removing the probe from the frypot</u>.



Loosen and unscrew completely the compression nut (bottom arrow), then the pass-through nut (top arrow).

1.7.3 Replacing the Temperature Probe; Computer-equipped Fryers (cont.)

10. Locate the temperature probe inside the frypot. Remove the temperature probe mounting hardware. Retain mounting hardware for installation of new temperature probe.



Locate the temperature probe.

11. The temperature probe can be removed through the bottom of the frypot as follows: Ensure the two-pin connector has been removed from the probe wiring harness (step 4, above). Remove the harness insulation. The probe can be pulled through the frypot from the bottom (complete step 7, above, prior to removing probe).

After removing the probe mounting hardware, the temperature probe can be removed through the bottom of the frypot. Retain the mounting hardware for reassembly.

12. Carefully remove the probe from the frypot. As the probe is removed, tilt the probe at an angle to facilitate removal (curved probes only).

13. Follow the steps on the next page to install the new temperature probe.

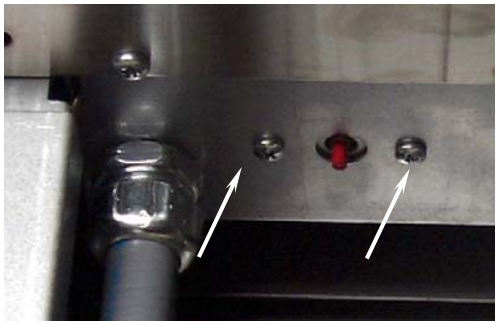
IMPORTANT: When installing new probe, use Loctite PST567 or equivalent pipe thread sealant on threads and ensure probe is positioned properly with the mounting hardware installed prior to tightening the compression nut**. Once tightened, the probe cannot be repositioned.**

Installing the New Temperature Probe:

1. Feed the probe wire through the probe nipple from the top side of the frypot.
2. Loosely install the bladder nut.
3. Mount the probe into the mounting hardware.
4. Tighten the bladder nut.
5. Install the insulation and plug.

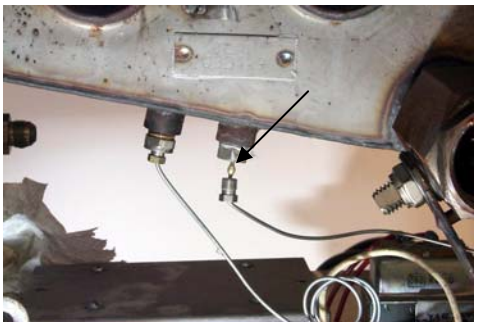
1.7.4 Replacing the High-limit Thermostat

1. Turn fryer off and drain oil from the frypot. Allow the frypot to cool completely before proceeding.
2. Perform steps 1-4 in Section 1.7.1, *Replacing the Computer*.
3. Remove fryer door for easier access to the temperature probe. First, remove top hinge from bracket. Then, lift door off bottom hinge pin.
4. Remove two screws securing the high-limit mounting-bracket. Do not disconnect wires from high-limit at this time.



Remove screws (arrows) securing high-limit to fryer.

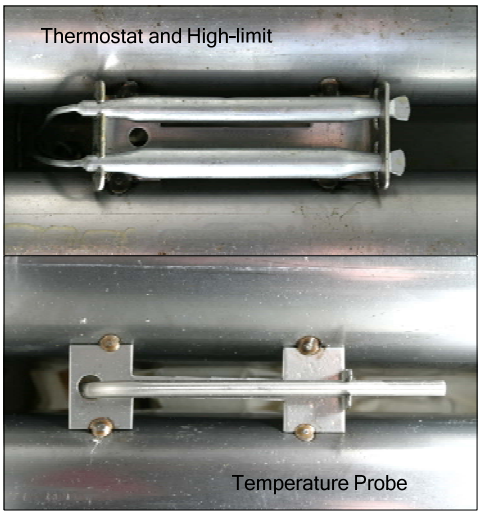
5. Loosen and completely unscrew the compression nut, then the pass-through nut on the frypot bottom. <u>Proceed to the next step before removing high-limit from frypot.</u>



Compression nut unscrewed. Unscrew the pass-through nut (arrow).

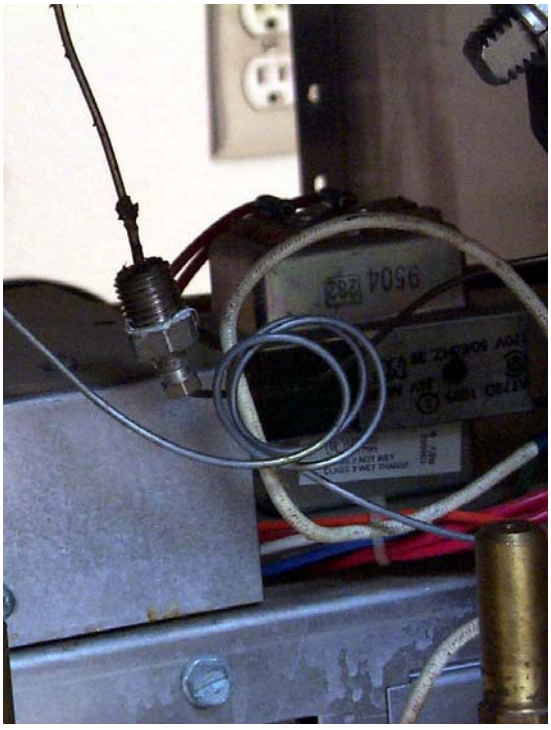
1.7.4 Replacing the High-limit Thermostat (cont.)

6. Locate the high-limit probe inside the frypot. Remove the high-limit probe mounting hardware. Retain mounting hardware for installation of new temperature probe



Locate the high-limit probe.

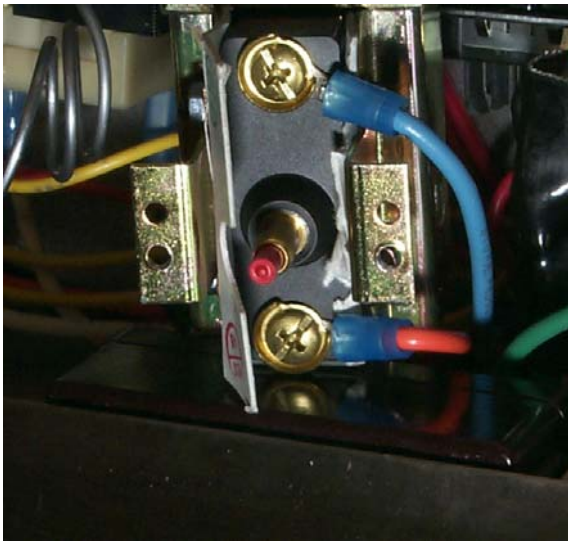
7. Carefully pull high-limit capillary tube and bulb out of the frypot from the bottom.



Remove high-limit capillary tube and bulb from the bottom of the frypot.

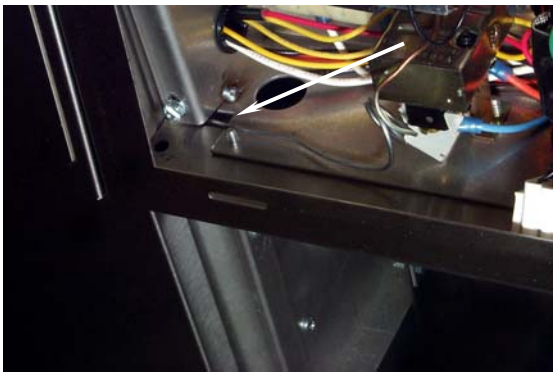
1.7.4 Replacing the High-limit Thermostat (cont.)

8. Mark and disconnect wires at the high-limit in the component box.



Mark and disconnect high-limit wiring (arrows). Reconnect wires to the same terminals on the replacement high-limit.

9. Remove high-limit from fryer by pulling the capillary tube and bulb through the component box opening (arrow). This may require removal of the control panel frame.



Component box opening (arrow).

10. Reverse the above steps for high-limit installation.

IMPORTANT: When installing new high-limit, ensure the capillary tube and bulb are positioned properly with the mounting hardware installed prior to tightening the compression nut**. Once tightened, the capillary tube cannot be repositioned.**

1.7.5 Replacing Rocker Switches

1. Disconnect the fryer from the electrical supply.

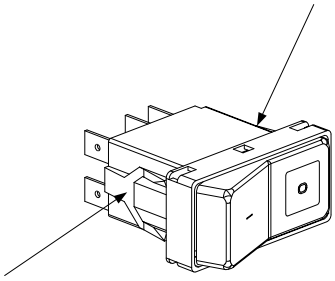
2. **If switches are located in a control box within the fryer**, remove the six screws securing the switch panel to the control box. Do not allow the switch panel to hang from the switch wiring harness or other wires. (Figure B)

Remove the screws holding the plate in place, then depress the clips on each end to remove the switch.

FIGURE B

1.7.5 Replacing Rocker Switches (cont.)

3. Depress the retaining clips (see illustration below) and push the switch out of the slot. If there is a switch-guard present, retain it for installation of the replacement switch.



Depress clips on each side to remove switch from control panel.

4. Remove wires one at a time from the switch being removed and connect to the replacement switch until all wires are transferred.

5. Reverse the above steps for reassembly.

1.7.6 Replacing the Gas Valve

⚠ DANGER
Drain the frypot or remove the handle from the drain valve before proceeding further.

1. Disconnect fryer from electrical and gas supplies.

2. Disconnect the wires from the gas valve terminal block, marking each wire to facilitate reconnections. For 120VAC gas valves, disconnect the black wire from the high-limit, then remove the bobtail connecting the white wire.

3. Remove the high-limit thermostat wire from the gas valve pilot coil (all but 120 VAC valves).

4. Remove the pilot gas line fitting from the gas valve.

5. Remove the pipe union collars to the left and right of the gas valve and remove the valve.

6. Remove the pipefitting from the old gas valve and install on the replacement valve, using Loctite PST567 or equivalent pipe thread sealant on threads. Do not apply sealant to the first two pipe threads. Doing so will clog and damage the gas valve.

7. Reverse steps 1-5 to install the replacement gas valve.

1.7.7 Replacing the Pilot Assembly

1. Remove the pilot tubing from the bottom of the pilot assembly.
2. If the pilot is an electronic ignition pilot, disconnect the ignition cable and the sense wire.
3. Remove the pilot mounting screw(s) from the pilot mounting bracket and remove the pilot.
4. Reverse the procedure to replace the pilot assembly.

NOTE: The above procedure is applicable to standing pilot, electronic ignition, and trailing pilot assemblies.

1.7.8 Replacing the Frypot

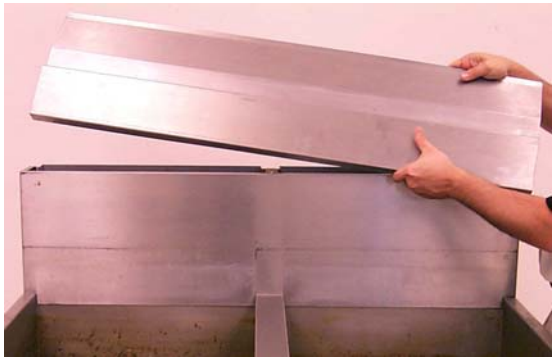
1. Open fryer doors and remove filter pan (if applicable). Ensure computer and all power switches are off. Drain and dispose of or store oil from all frypots prior to moving fryer.

⚠ DANGER
Hot cooking oil will cause severe burns. Never attempt to move this appliance when filled with hot cooking oil or to transfer hot cooking oil from one container to another.

2. Turn gas valve off, then turn gas off at supply valve or meter. Disconnect supply line from gas manifold at rear of fryer.

NOTE: If restraints are installed on the fryer, disconnect restraints prior to disconnecting the gas supply line.

3. Unplug fryer from electrical supply source.
4. Remove fryer door for easier access to the temperature probe. First, remove top hinge from bracket. Then, lift door off bottom hinge pin.
5. Remove the basket hanger from the flue cap by lifting up and off of fryer. Some units may have a built-in flue deflector on the basket hanger. Units with basket lifts will require the removal of the lift arms prior to removing the basket hanger.


Removing the basket hanger from the flue cap.

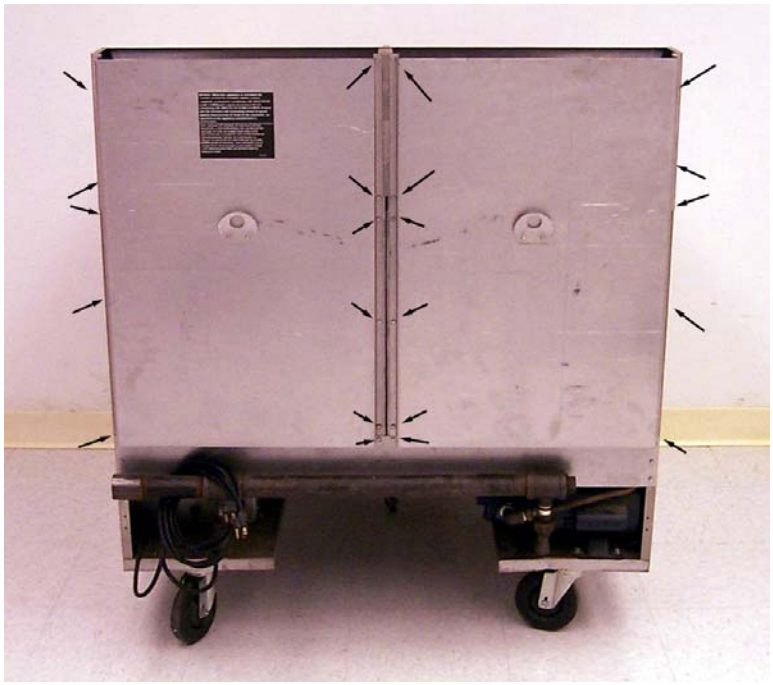
1.7.8 Replacing the Frypot (cont.)

6. Remove the top cap. It is held in place by one screw on each side of the fryer. If the fryer has a controller on the front, the top cap may also be held in place by two screws on the front of each pot. FPHD65 units may have two screws on each end of the top cap.

7. Remove the joiner strips on either side of the frypot. Be careful not to bend the joiner strip during removal.

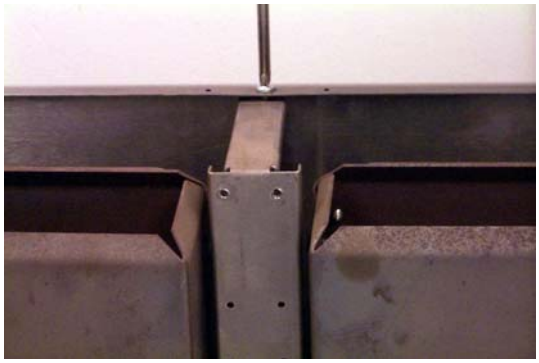
Removing the joiner strip.

8. Remove back panels of the fryer. There may be both upper and lower panels and several screws secure them. Screw location and orientation will vary according to fryer model.



Typical screw locations on the back panel (may vary by model).

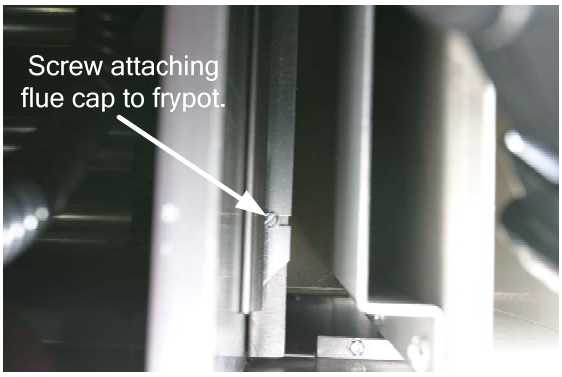
9. Remove screw securing brace (and back panel) to the flue cap. Support the brace with hand while removing screw to prevent brace from falling away. Remove brace and set aside for reassembly.



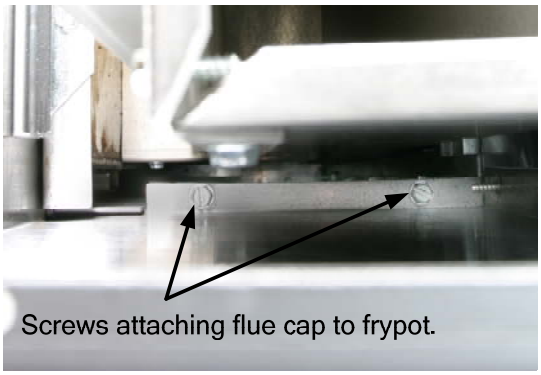
Removing brace holding back panel to flue cap.

1.7.8 Replacing the Frypot (cont.)

10. Remove screws securing flue cap to frypot (access from above; a nut-driver with an extension or long screwdriver is required). Use care not to drop the screws into the flues. If this happens, the screws can be retrieved when the flue is removed (Step 16). Use a screwdriver or similar tool to free flue cap from frypots. Remove flue cap by lifting up and off of fryer.



Remove the screws (arrow) securing the flue cap to the frypot on the long edge. There will be two or three screws depending on configuration. (view from above, looking down into flue)



Remove the screws (arrows) securing the flue cap to the frypot on the short edge. There will be two screws on each end of the flue. (view from above, looking down into flue)

11. Remove gas manifold pipe for access to gas manifold shield by disconnecting at the unions. Ensure gas supply is shut off and supply line is disconnected prior to removing. Set gas manifold aside. Remove screws securing gas manifold shield. Remove shield to access oil-return plumbing components connected to the frypots.

    NOTE: For units without built-in filtration skip the steps pertaining to removal and replacement of oil-return plumbing.

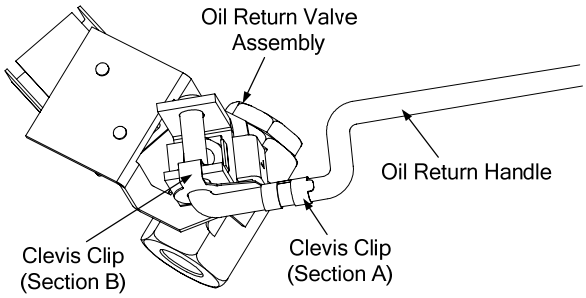
Removing gas manifold shield.

1.7.8 Replacing the Frypot (cont.)

12. Remove screws securing flue to frypot (access from above; a nut-driver with an extension or long screwdriver is required). Retrieve any screws dropped into the flue during removal of the flue cap and frypot bracket.

Removing bolts (arrows) securing flue to frypot.

13. Remove the clevis clip and oil return handle rod from the oil return valve at the rear of the fryer. Slip Section A of the clevis clip off of the oil return handle by pulling up on the rings. Slide the oil return handle out of the bracket and Section B of the clevis clip. Repeat for the drain flush handle (if applicable).



Disconnect oil-return handle from clevis clip and valve.

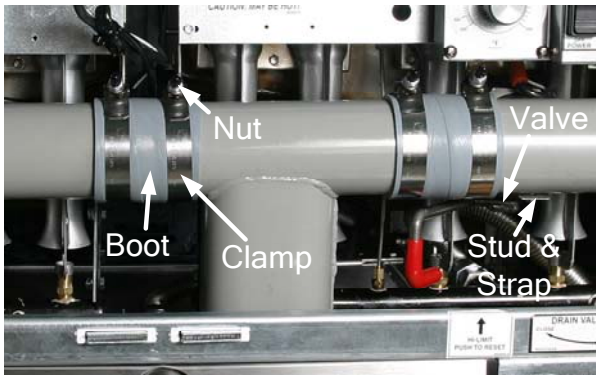
14. Loosen the two screws on the front of the oil return handle bracket at the front of the fryer. Remove the bracket and handle and set aside for reassembly. Repeat for the drain flush handle (if applicable).

Oil-return handle bracket and screws.

1.7.8 Replacing the Frypot (cont.)

15. Remove the drain manifold. Only the drain tubes directly blocking the frypot being replaced require removal.

    - Remove the nuts holding the drain valve strap onto the drain tube stud.
    - Disconnect the Teflon tube at the back of the center dump tube piece and any other components attached to the tubes, including drain flush flexlines.
    - Loosen the nut on each clamp holding the rubber boots and drain sections together.
    - Carefully remove the tubes by pulling down at an angle, straight out of the drain valves, and working them gently out of the rubber boots. Set aside for reassembly.

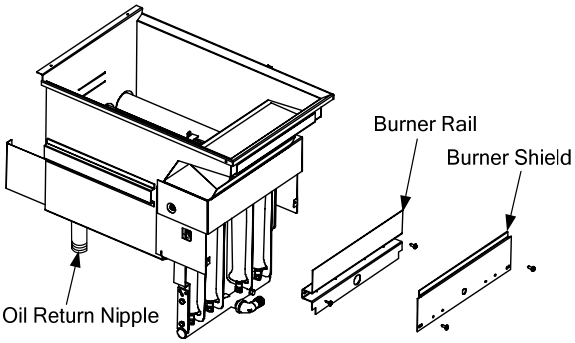


Drain manifold parts.

16. Remove the nipple attaching the oil return line to the bottom of the frypot at the rear of the fryer using a wrench. This may require removal of other pieces of the oil return manifold, as needed.

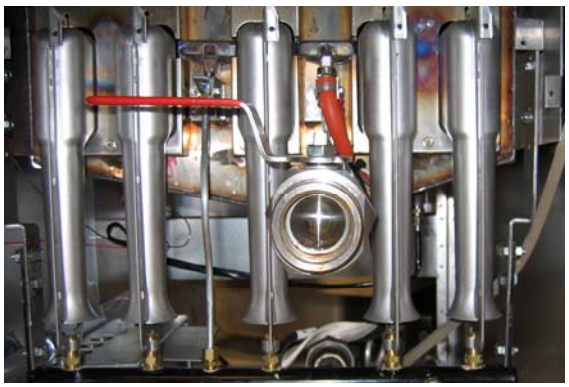
17. Remove the burner shield by loosening the screw on each end.

18. Remove the burner rail by loosening the screw on each end. The burner rail secures the burners in the burner manifold. Be careful to ensure that the burners do not fall out of the gas manifold, as they might be damaged and dented.



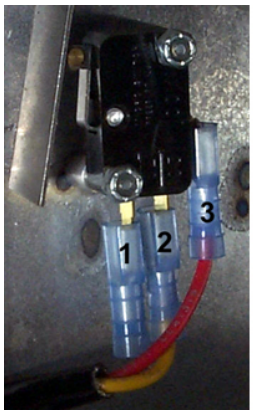
Oil-return nipple, burner shield, and burner rail.

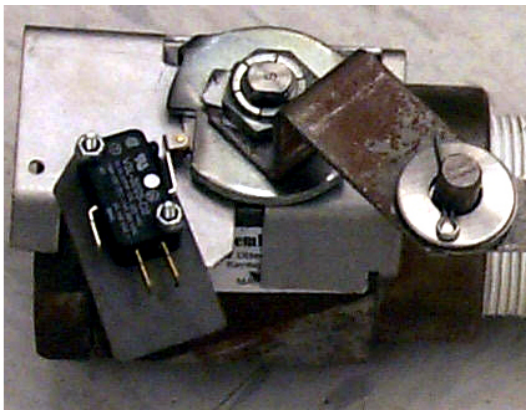
14. Remove the burners to gain access to the temperature probe and to ease frypot removal. Lean each burner slightly away from the frypot to clear the burner seal (metal box attached to frypot). Then, pull the burner up and off of the orifice. The burners should be easy to remove and do not require force.


Removing drain valve handle and burners from fryer.

1.7.8 Replacing the Frypot (cont.)

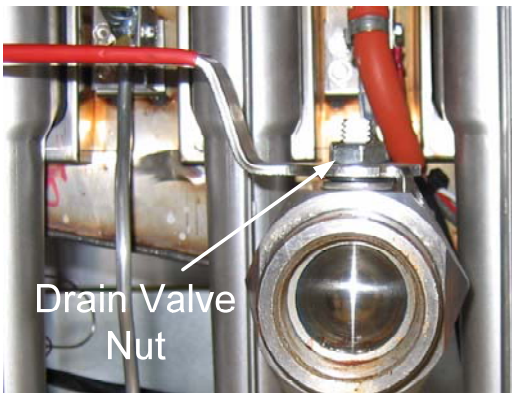
19. If the fryer is equipped with drain-valve microswitches, mark the wires and microswitch terminals, then disconnect wires from the switch. Secure the wires to prevent damage when frypot is removed.





Left: Microswitch wires marked for removal (ensure microswitch terminals are marked the same as the wires removed). Right: Microswitch mounted to drain valve.

20. Remove the drain valve handle by loosening the drain valve nut and removing attached hardware. Depending on placement and configuration, the valve may be turned in a different direction than pictured.

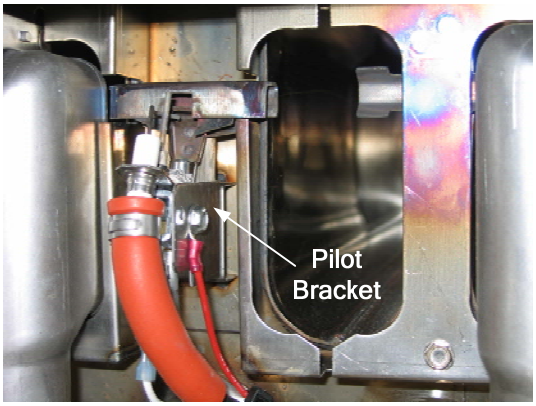


Remove the drain valve nut and attached hardware.

21. Remove the pilot assembly from the frypot.

    - If trailing pilot, disconnect the pilot supply line from the trailing pilot valve on the burner manifold.

Remove the mounting screw(s) to detach the pilot assembly from the pilot bracket.



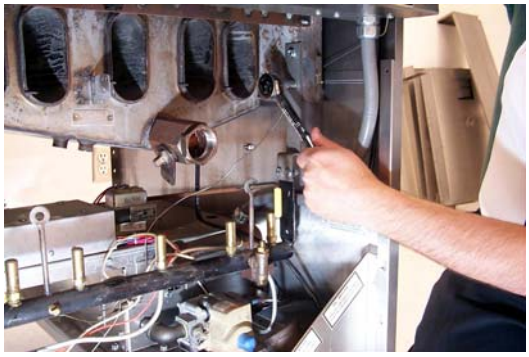
Remove the pilot assembly from the pilot bracket on the frypot.

1.7.8 Replacing the Frypot (cont.)

22. Remove the temperature probe from frypot. (See Section 1.7.3, *Replacing the Temperature Probe: Computer–equipped Fryers*, for specific instructions.)

23. Remove the high-limit from the frypot.

24. Remove bolts from brackets securing burner manifold to frypot. Leave the manifold in place.



Removing bolts (arrows) from burner manifold support brackets (both sides). Leave the burner manifold in place after removing bolts.

25. Using a sharp knife or box-cutter, cut the silicon seal around the frypot. Use care not to scratch stainless steel surfaces.

Cutting frypot seal prior to frypot removal.

1.7.8 Replacing the Frypot (cont.)

26. Ensure wires and tubes will not be caught on the frypot when it is removed.

27. Remove frypot from fryer by lifting up and out.

28. Position the frypot upside down on a suitable work surface.

Lifting frypot from fryer.

29. Record position of the valve stem in relation to the frypot prior to removing the drain valve. If equipped, remove microswitches and mounting hardware from valve prior to removal. Using a suitable wrench, remove the drain valve from the frypot. Use Loctite PST567 sealant when installing drain valve on replacement frypot.

Removing drain valve from frypot.

30. Remove all other hardware and accessories from the frypot.

31. Reverse the above steps to install the replacement frypot.

32. Add a bead of silicon around the edges of the new frypot, sealing the seam where the frypot and the cabinet meet. Only do this when the frypot is completely installed.

1.8 Troubleshooting and Problem Isolation

Because it is not feasible to include every issue that might occur, this section is intended to provide technicians with a general knowledge of the broad problem categories associated with this equipment and the probable causes of each. With this knowledge, the technician should be able to isolate and correct any problem encountered.

You are likely to encounter problems in these broad categories:

1. ignition failure,
2. improper burner function,
3. improper temperature control,
4. improper computer function,
5. improper filtration function,
6. frypot leakage, and
7. basket lift malfunction.

The probable causes of each category are discussed in the following sections. Troubleshooting guides are included in Section 1.9 to assist in identifying some of the more common problems.

1.8.1 Ignition Failure

Ignition failure occurs when the ignition module fails to sense a flame within the 60-second time delay period and locks out. Turn the fryer off, locate and fix the problem, then turn fryer back on to clear the module lock.

There are three primary reasons for ignition failure, listed in order of probability:

1. The gas and electrical power supplies,
2. The electronic circuits, or
3. The gas valve.

The Gas and Electrical Power Supplies

The main indicators that the gas or electrical power supply is the cause of ignition failure are as follows: an entire battery of fryers fails to light, and/or there are no indicator lights illuminated on the fryer experiencing ignition failure. Verify that the quick disconnect hose is properly connected, the fryer is plugged in, the main gas supply valve is open, and the circuit breaker for the fryer electrical supply is not tripped.

1.8.1 Ignition Failure (cont.)

The Electronic Circuits

If gas and electrical power are supplied to the fryer, the next most likely cause of ignition failure is a problem in the 24 VAC circuit of fryers equipped with electronic ignition systems, or in the pilot system for those without electronic ignition. If the fryer is equipped with a SUFF/UFF filtration system, verify that the drain valve is fully closed. (The valve is equipped with a microswitch that must be closed for power to reach the gas valve. The valve handle can appear to be closed when the microswitch is open.) If the valve is fully closed, or the fryer does not have a filtration system, refer to the troubleshooting guides in this chapter.

The Gas Valve

If the problem is not in the 24 VAC circuit or pilot system, it is most likely in the gas valve. Before replacing the gas valve, refer to the troubleshooting guides in this chapter.

1.8.2 Improper Burner Function

In these instances, the burner ignites but exhibits abnormal characteristics, such as *popping*, incomplete lighting of the burner, fluctuating flame intensity, and flames "rolling" out of the fryer.

Popping indicates delayed ignition. In most cases, the main gas valve is opening, but the burner is not immediately lighting. When ignition does take place, excess gas ignites rapidly rather than smoothly.

The primary causes of popping are:

1. low or fluctuating gas pressure,
2. misdirected or weak pilot flame,
3. clogged burner orifices,
4. clogged burner flame-transfer holes
5. clogged burners,
6. inadequate make-up air,
7. heat damage to the controller or ignition module,
8. an out-of-adjustment igniter or broken ignition wire,
9. a defective ignition module,
10. missing or misaligned burners,
11. clogged vent tube (causing incorrect gas pressure), or
12. make-up air is blowing down the flue.

1.8.2 Improper Burner Function (cont.)

If popping occurs only during peak operating hours, the problem may be incorrect or fluctuating gas pressure. Verify that the incoming gas pressure (pressure to the gas valve) is in accordance with the appropriate requirements listed in the Installation and Operation manual that came with the fryer, and that the pressure remains constant throughout all hours of usage. Refer to *Adjusting Burner Manifold Pressure* in Section 1.4 if burner manifold pressure is suspected of being incorrect.

If popping is consistent during all hours of operation, verify that the pilot is properly positioned above the burner orifice and that the pilot pressure is correct. Correct pilot pressure is indicated by a flame 1 to 1½" long. Also verify that igniter is properly adjusted (electrode tip 1/8" from pilot hood corner). Refer to Section 1.5 for pilot adjustment procedure.

Clogged burners, burner orifices, and burner flame transfer holes are also likely causes of delayed ignition. Clogged burners are indicated by uneven flame or partial flame on the burner face. Clogged orifices are indicated by no flame. Clogged burner flame transfer holes prevent the outermost burners from lighting immediately with the middle burners (four- and five-tube frypots).

Another cause of popping is an insufficient air supply or drafts that are blowing the pilot flame away from the burner. Check for "negative pressure" conditions in the kitchen area. If air is flowing into the kitchen area, this indicates that more air is being exhausted than is being replenished and the burners may be starved for air.

If the fryer's gas and air supplies are okay, the problem most likely is with one of the electrical components. Examine the ignition module for signs of melting, distortion, or discoloration due to excessive heat build-up in the fryer. Also, examine the controller for the same conditions. This condition usually indicates improper flue performance. A melted or distorted ignition module is automatically suspect and should be replaced, but unless the condition causing excessive heat in the fryer is corrected, the problem is likely to recur.

Next, ensure the ignition wire is tightly connected at both ends and examine it for obvious signs of damage. Again, if damage is due to excessive heat in the fryer, that problem must also be corrected.

Check for proper operation by disconnecting the wire from the igniter, inserting the tip of a screwdriver into the terminal, and holding it near the frame of the fryer as the power switch is placed in the "ON" position. A strong, blue spark should be generated for at least 60 seconds.

⚠ DANGER
MAKE SURE YOU ARE HOLDING THE INSULATED HANDLE OF THE SCREWDRIVER AND NOT THE BLADE. THE SPARKING CHARGE IS APPROXIMATELY 25,000 VOLTS.

Ensure the gap setting of the igniter is correct (electrode tip 1/8" from pilot hood corner).

1.8.2 Improper Burner Function (cont.)

Burners lighting on the left side only may be caused by a trailing pilot problem (four- and five-tube frypots) or improper burner manifold pressure.

Fluctuating flame intensity is normally caused by either improper or fluctuating incoming gas pressure, but may also be the result of variations in the kitchen atmosphere. Verify incoming gas pressure in the same way as for "popping," discussed in the preceding paragraphs. Variations in the kitchen atmosphere are usually caused by air conditioning and/or ventilation systems starting and stopping during the day. As air conditioning/ventilation systems start and stop, the pressure in the kitchen may change from positive or neutral to negative, or vice versa. Changes in airflow patterns may affect flame intensity.

Flames "***rolling***" ***out of the fryer*** are usually an indication of negative pressure in the kitchen and make up air blowing down the flue. Air is being sucked out of the fryer enclosure and the flames are literally following the air. If negative pressure is not the cause, check for high burner-manifold gas pressure in accordance with the procedures in Section 1.4. An obstructed flue, which prevents the fryer from properly exhausting, may also be the cause.

Excessively noisy burners may indicate that the burner gas pressure is too low, the tube diffusers are defective or burned out, or it may simply be that the gas valve vent-tube is blocked (if applicable). If the gas pressure is correct, the tube diffusers are intact and in good condition, and the vent-tube is unobstructed (if applicable), the gas valve regulator is probably defective.

1.8.3 Improper Temperature Control

Temperature control is a function of several interrelated components, including the melt cycle. Each must operate correctly. The principal component is the temperature probe. Depending upon the specific configuration of the fryer, other components may include the interface board, the computer/controller itself, and the ignition module.

Improper temperature control problems can be categorized into melt cycle problems and failure to control at setpoint.

In fryers equipped with a Thermatron, the problem will be with the thermostat. Possible causes are that the thermostat is out of calibration or defective. Refer to Section 1.6 for instructions on calibrating the thermostat.

In fryers equipped with computers, the problem may be with the temperature probe, the interface board, or the computer. Refer to the troubleshooting guides in this chapter.

1.8.4 Improper Computer Function

Sensitivity or "Stretch Time." Sensitivity—or stretch time—is a programmable feature that increases the cook time countdown based on variations in the oil temperature from the setpoint (e.g., when cold product is dropped into the oil, causing the oil temperature to drop).

The sensitivity for each product button has 10 settings (0 through 9). A "0" sensitivity setting will disable the feature (no change in cooking time), while a nine will provide the highest sensitivity or the most change. The correct sensitivity for any product is based on the product type, its density, the setpoint temperature, and the customer's own requirements.

Common Computer Complaints. Most problems concerning computers have to do with programming them. There are four common complaints. The complaints, their causes, and corrective actions are as follows:

1. Fryer constantly displays "HI".

   Cause: Setpoint incorrect or missing.

   Corrective Action: Press ☑ 1 6 5 0, enter the correct setpoint using keypad, then press ☑ and then this 🌡 to lock in the setpoint.

2. Temperature is displayed in Celsius.

   Cause: Computer is programmed to display in Celsius.

   Corrective Action: Press ☑ 1 6 5 8.

3. Temperature is constantly displayed.

   Cause: Computer is programmed for constant temperature display.

   Corrective Action: Press ☑ 1 6 5 L.

4. Computer times down too slowly or too quickly.

   Cause: Computer is compensating for oil temperature via the sensitivity setting.

   Corrective Action: Reprogram sensitivity setting for each product in accordance with programming instructions in the Compu-Fry Operation and Programming manual, P/N 819-5865.

1.8.5 Improper Filtration Function

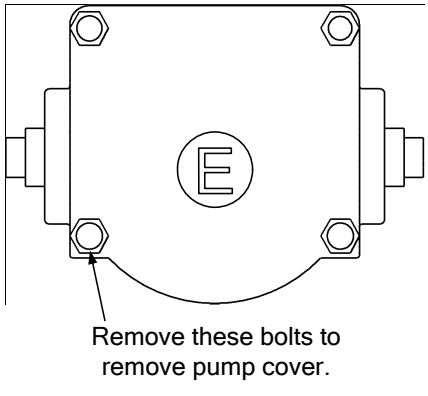
The majority of filtration problems arise from operator error. One of the most common errors is placing the filter paper on the bottom of the filter pan rather than over the filter screen. Anytime the pump is running, but no oil is being filtered, check the installation and size of the filter paper. Verify that the O-rings on the slip-connection are in good condition. Missing or worn O-rings allow the pump to suck air, decreasing its efficiency.

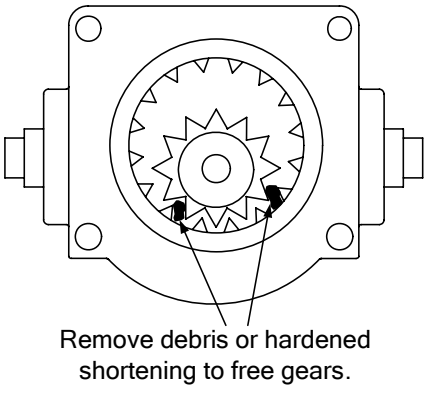
If the pump motor overheats, the thermal overload will trip and the motor will not start until it is reset. If the pump motor does not start, press the red reset switch located on the rear of the motor. Also, reset the filter circuit breaker located under the fryer control panel. If the pump then starts, something caused the motor to overheat. The pump most likely overheated for one of the following reasons:

- Shortening was solidified in the pan or filter lines.
- Multiple frypots were filtered one-after-another. Allow the pump to cool for 30 minutes before using again.
- The operator attempted to filter unheated oil. Cold oil is thick and will cause the pump motor to work harder and overheat.

If the motor runs, but the pump does not, the pump is blocked. Incorrectly sized or installed paper allows food particles and sediment to pass through the filter pan and into the pump. When sediment enters the pump, the gears bind and cause the motor to overheat, tripping the thermal overload. Solidified shortening in the pump will produce the same result. A pump seized by debris or hard shortening must be disassembled, cleaned, and reassembled in the following manner:

1. Disconnect power to the filter system.
2. Remove the front cover of the pump to access the gears inside, if the pump is accessible while still inside the cabinet. If the front cover is not accessible, the pump must be removed from the pump motor (disconnect input/output plumbing from the pump prior to removing it). Remove three setscrews to disengage the pump from the motor.
3. Prior to reassembly, the inside housing must be clean and free of any sediment or debris. If not, the gears will bind again after reassembly.





NOTE:

The pump cover in current production units is held in place by four (4) bolts.

1.8.5 Improper Filtration Function (cont.)

Incorrectly sized or installed paper will allow food particles and sediment to pass through and clog the suction tube on the bottom of the filter carriage. Particles large enough to block the suction tube may indicate that the crumb tray is not being used.

Pan blockage can also occur if shortening is left in the pan and allowed to solidify. Heater strips (if equipped) on the oil return plumbing are designed to prevent solidification of shortening left in the plumbing. Heater strips will not melt or prevent solidification of shortening in the pan.

Remove blockage by forcing it out with an auger or drain snake. DO NOT use compressed air or other pressurized gases to force out the blockage.

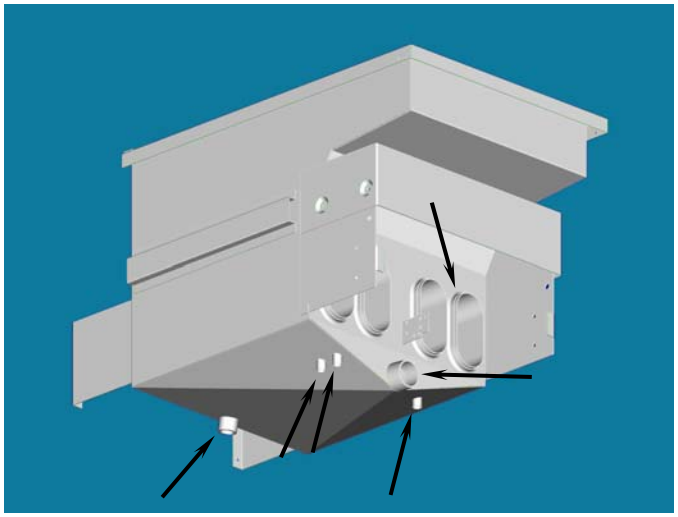
The SUFF/UFF filtration systems use microswitches attached to handles for each vat. They are wired in parallel and provide the 24 VAC required to activate the pump relay coil when the handles are moved to the ON position. The activated pump relay coil pulls the pump motor switch in, supplying power to the pump motor.

Filter systems equipped with oil-return heater tape are wired into the 120 VAC source, and remain energized as long as the unit is plugged in and power remains constant. Heater tape should receive constant power all day and all night; it should not be connected to a power supply that is turned off at night.

1.8.6 Frypot Leakage

Frypot leaks are almost always due to improperly sealed high-limit, thermostats/temperature probe and drain fittings. When installed or replaced, each of these components must be sealed with Loctite PST567 sealant or equivalent to prevent leakage. In very rare cases, a leak may develop along one of the welded edges of the frypot, or where the tube is welded to the frypot. When this occurs, the frypot must be replaced.

If the sides or ends of the frypot are coated with oil, the most likely cause is spillage over the top of the frypot rather than leakage.

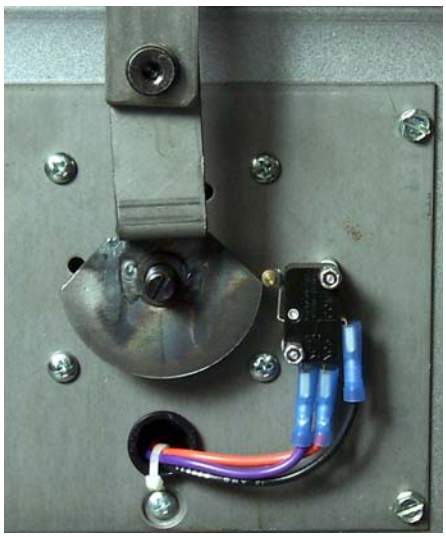


Frypot locations (indicated by arrows) where potential leaks could occur.

1.8.7 Improper Basket Lift Function

Bell-Crank Basket Lifts

Most High Efficiency Decathlon Series gas fryers are equipped with a **bell-crank style basket lift.** A cam and a bell crank are connected to the basket lift arm by a flat metal link. The cam is attached to a drive motor. The motor rotates the cam, raising or lowering the lift arm linked to the bell crank. A roller-activated microswitch is used to limit travel. When the roller in the microswitch is in contact with the cam, the motor is energized. As the cam rotates, the roller loses contact with the cam and the motor power circuit is broken, de-energizing the motor.



Back view of bell-crank basket lift.

Timing circuitry in the controller initiates and stops basket lift operation. When the product button is pressed, the timing circuitry activates a coil in the basket lift relay to supply power to the motor. The microswitch stops the motor at the lift's lower travel limit and the switch contacts are reversed. At the end of the programmed cooking time, the timing circuit activates the coil once more and the lift rises until the microswitch again loses contact with the cam, opening the motor power circuit and stopping the motor.

Problems with the bell-crank basket lift system can be grouped into two categories:

- binds and jams or
- motor and gear wear.

Bell-crank basket-lift arms.

Binds and jams. Noisy, jerky, or erratic lift movement is usually due to lack of lubrication. Apply a light coat of Lubriplate or similar lightweight white grease to the connection points to correct the problem.

Motor Problems. If power is reaching the motor but the motor fails to run, the motor is burned out and must be replaced.

1.9 Troubleshooting Guides

The following troubleshooting guides are intended to assist service technicians in quickly isolating the probable causes of equipment malfunctions by following a logical, step-by-step process.

PROBLEM	PROBABLE CAUSES	CORRECTIVE ACTION
Burner will not ignite. Light in ON/OFF switch is not illuminated.	A. ON/OFF switch is off.	A. Turn ON/OFF switch on.
ON/OFF switch is on, but the switch light is not illuminated.	A. No voltage at switch.	A. Ensure line voltage is present at the switch.
ON/OFF switch is on and the switch light is illuminated, but there is no output to gas valve.	A. Drain microswitch circuit (filter-equipped units) is open.	A. Ensure drain valve is fully closed and microswitch is functioning. Replace microswitch if defective.
	B. Voltage is present at ON/OFF switch, but continuity of the switch in ON position is not "0."	B. ON/OFF switch is defective. Replace switch with a known working switch.
	C. Continuity of thermostat is not "0" (oil temperature is at least 15°F below electronic thermostat setting).	C. Thermostat(s) is/are defective. Replace defective thermostat with a known working thermostat.
	D. Gas valve is suspect.	D. Go to "No burner flame" section.

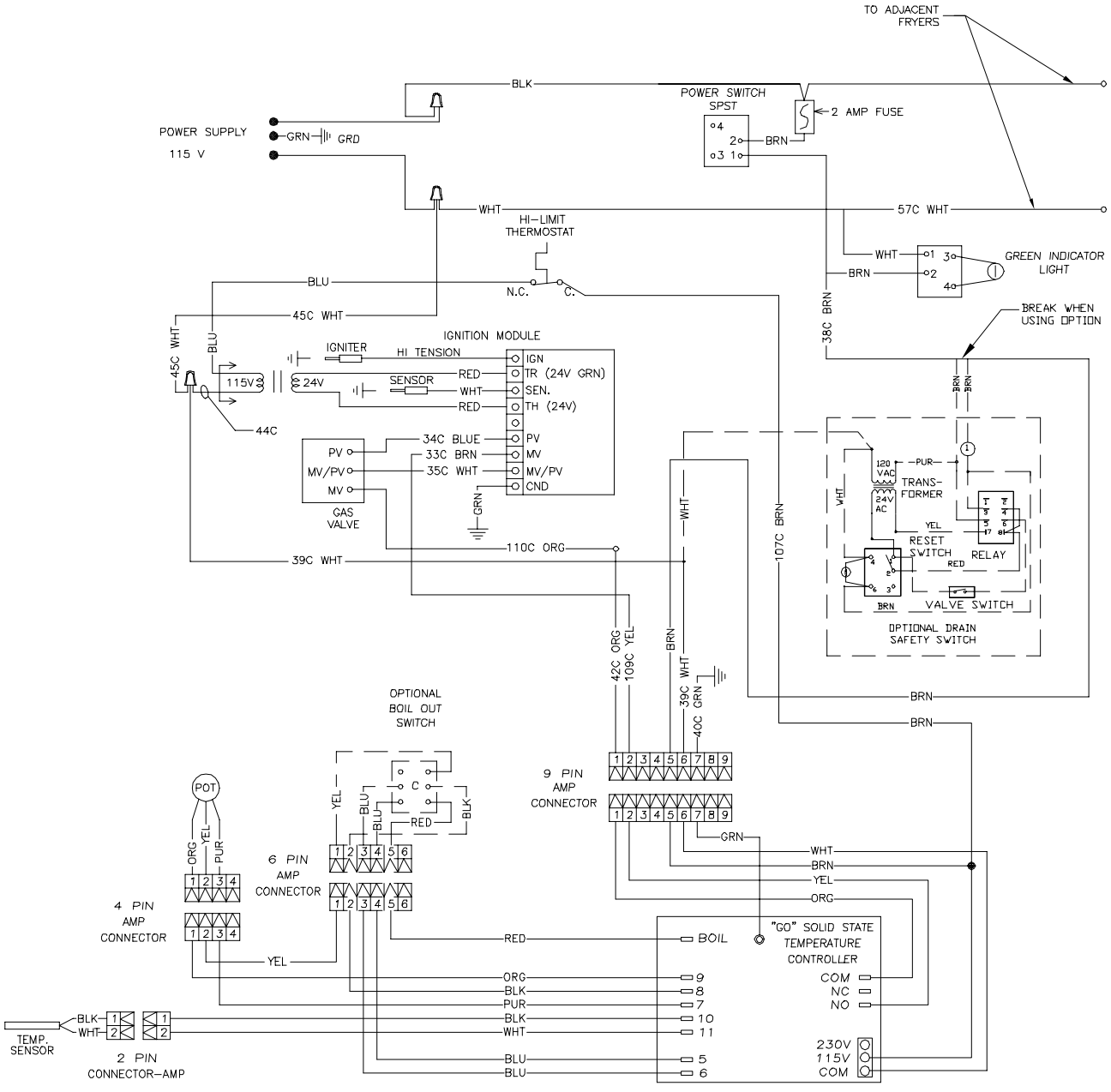
1.9 Troubleshooting Guides (cont.)

No burner flame.	C. Gas valve is known to be good, but there is not 24 VAC (120VAC on systems so equipped) at the gas valve terminals.	D. Inspect electronic sensor (while still in frypot) for damage. Replace if bent, dented, or cracked. Inspect leads for fraying, burning, breaks, and/or kinks. If found, remove and replace thermostat(s). Remove leads from terminal block, allow oil to cool 15°F (8°C) below thermostat setting, and check continuity. If continuity is not "0," then thermostat has failed. Replace thermostat(s).
	E. Continuity from terminal block to gas valve electronic/operating thermostat wire is not "0."	E. Inspect wiring for breaks or shorts and repair if necessary.
Fluctuating or erratic lighting of burner flame.	A. Incoming gas supply pressures are not within range [Natural- 6-14" W.C. (1.49-3.49 kPa); Propane- 11-14" W.C. (2.74-3.49 kPa)]	A. Inspect gas supply to fryer. Repair and/or replace faulty components (defective supply shut-off valves, incorrect piping size, etc.)
	B. Air in gas supply lines (new installation).	B. Allow unit to cycle on and off for approximately 30 minutes to force air from gas manifold and lines.
Electronic/operating thermostat will not adjust to correct temperature.	A. Electronic/operating thermostat is out of calibration.	A. Calibrate electronic/operating thermostat. Replace if calibration is not possible.

1.10 Wiring Diagrams

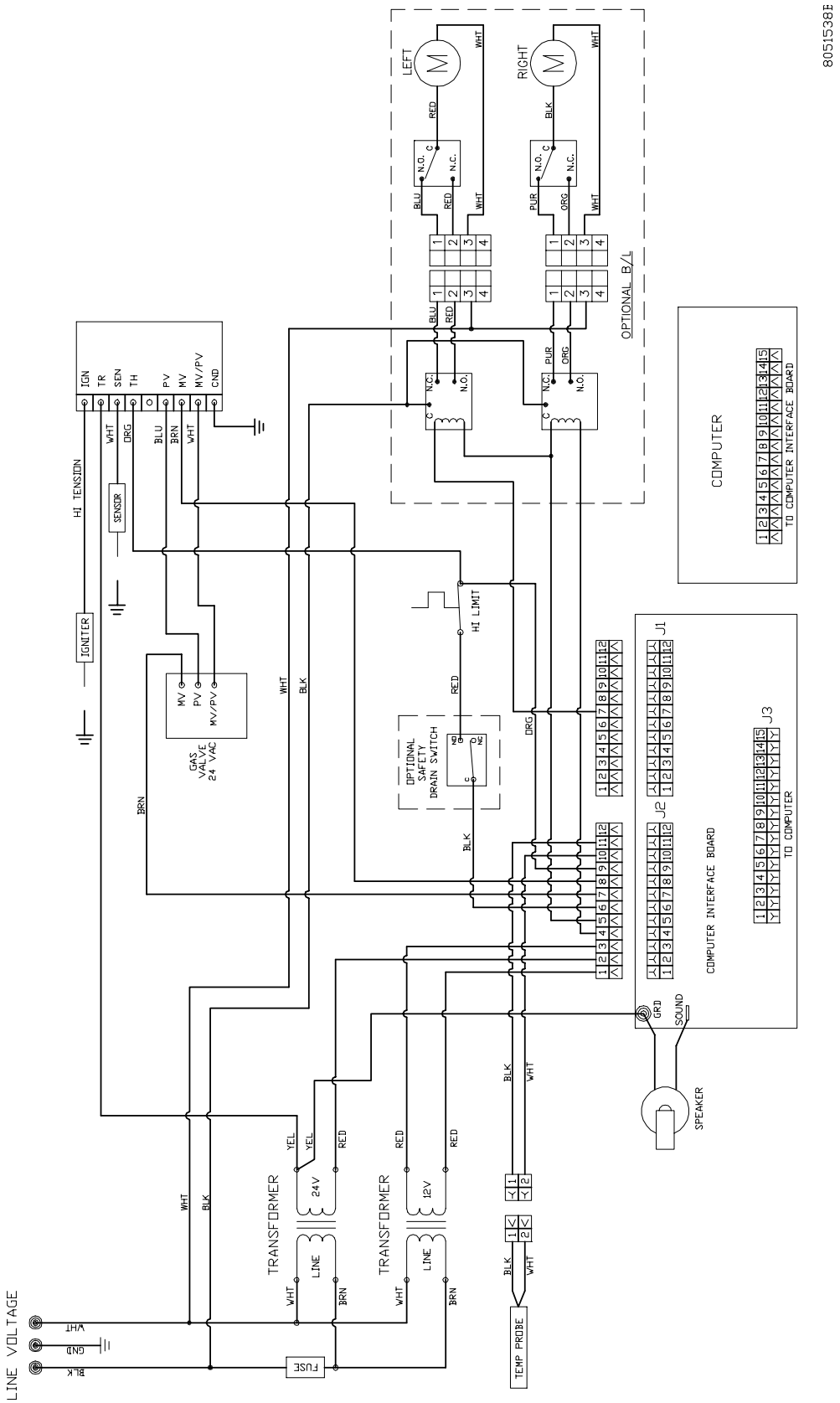
Note: The diagrams in this section depict wiring as of the date of manual publication. It may not reflect design changes made to the equipment after publication. Refer to the wiring diagram affixed to the unit when actually troubleshooting this equipment.

High Efficiency Decathlon, Thermatron with Constant Pilot
(Right/left sides are the same.)

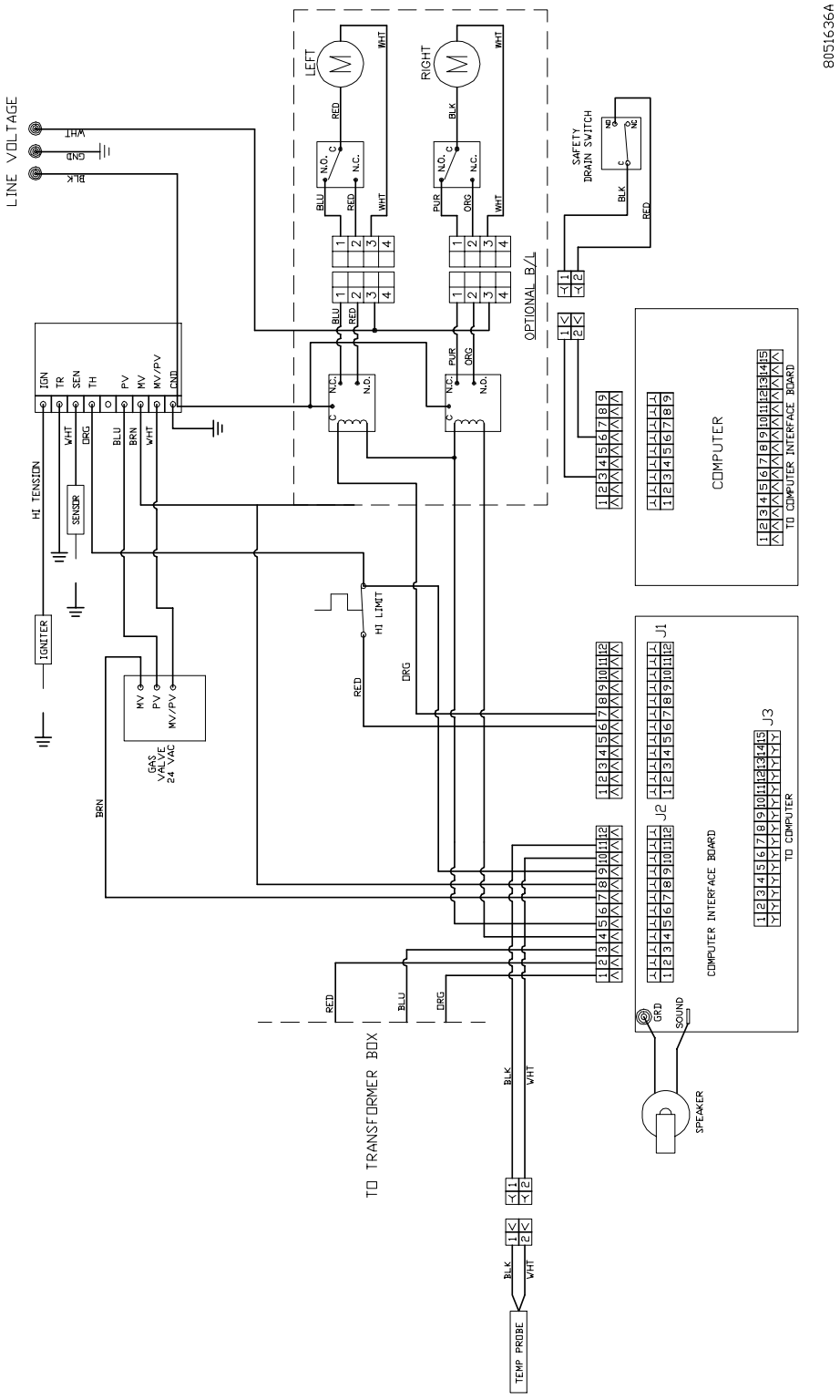


805-1605A

Computer with Constant Pilot



CM4-S Wiring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LINE VOLTAGE
WHT
GND
BLK
LEFT
RIGHT
WHT
RED
BLK
N.O.
N.C.
BLU
RED
WHT
PUR
ORG
WHT
OPTIONAL B/L
SAFETY DRAIN SWITCH
NO
NC
C
BLK
RED
IGN
TR
SEN
TH
PV
MV
MV/PV
CNN
HI TENSION
WHT
ORG
SENSOR
BLU
BRN
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MV
PV
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GAS VALVE 24 VAC
BRN
HI LIMIT
RED
ORG
COMPUTER
TO COMPUTER INTERFACE BOARD
J1
J2
J3
COMPUTER INTERFACE BOARD
TO COMPUTER
GRD
SOUND
SPEAKER
TO TRANSFORMER BOX
RED
BLU
ORG
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WHT
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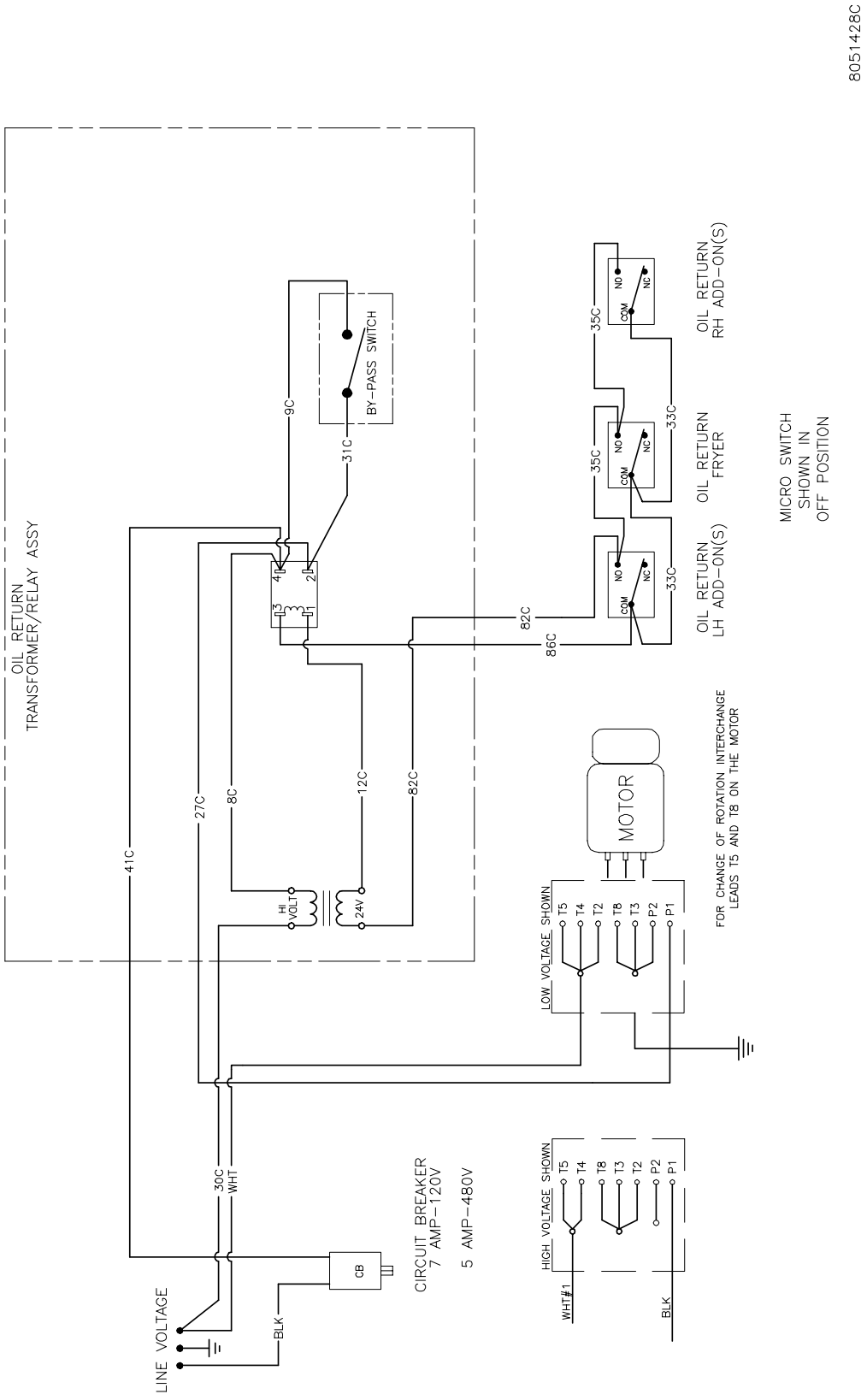
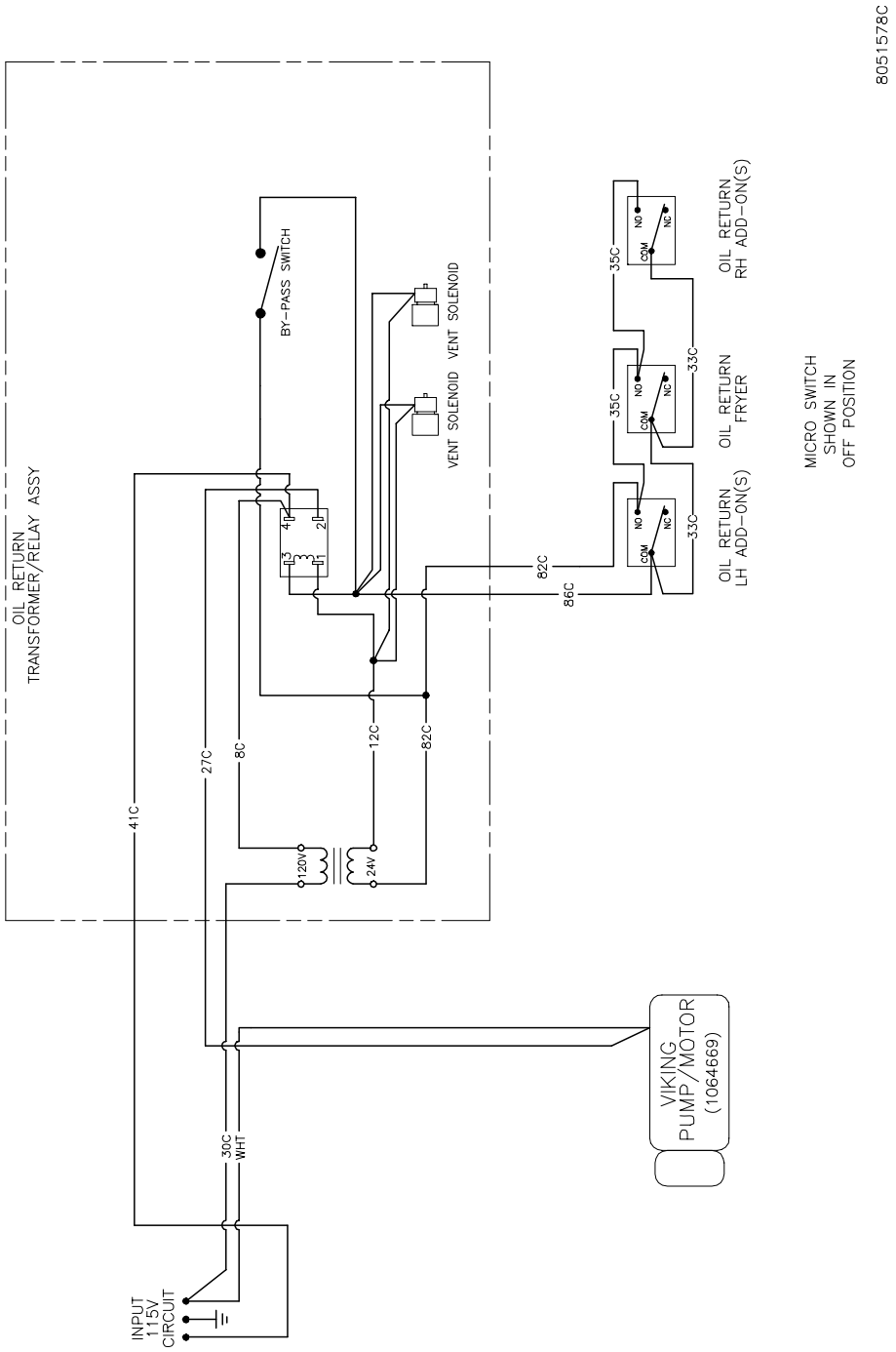
WHT
TEMP PROBE

Dean Oil Return Wiring



Dean Oil Return Wiring, with Solenoid



1.11 Probe Resistance Charts

Thermatron Probe Resistance Chart

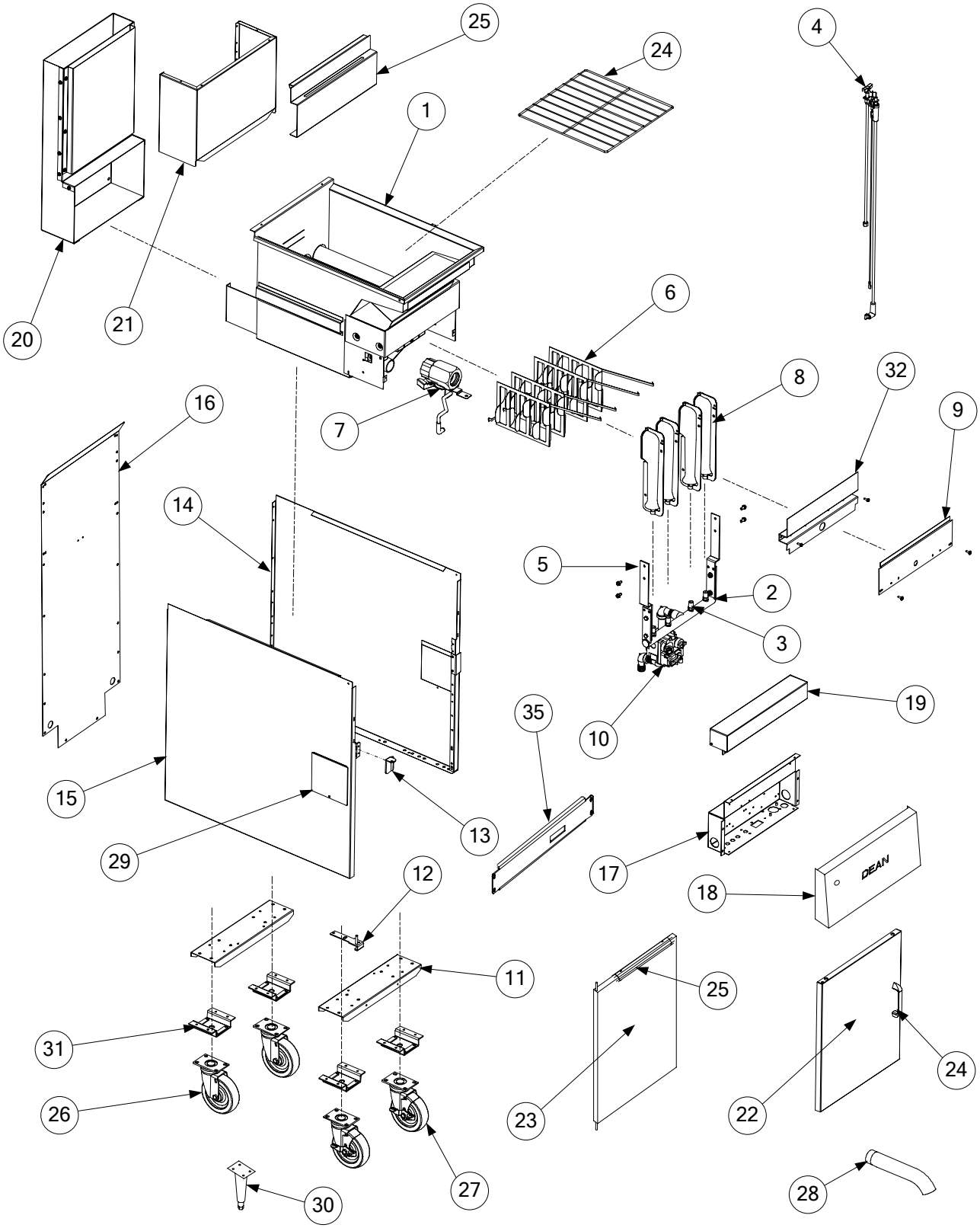
° Celsius	° Fahrenheit	Ohms (±3%)
21	70	108130
27	80	84606
32	90	66721
38	100	53020
43	110	42452
49	120	34206
54	130	27735
60	140	22641
66	150	18588
71	160	15349
77	170	12741
82	180	10635
88	190	8925
93	200	7527
99	210	6391
104	220	5470
110	230	4705
116	240	4030
121	250	3441
127	260	2967
132	270	2583
138	280	2255
143	290	1977
149	300	1729
154	310	1496
160	320	1320
166	330	1170
171	340	1051
177	350	942
182	360	840
188	370	750
193	380	676
199	390	605
204	400	541

Computer Probe Resistance Chart

° Celsius	° Fahrenheit	Ohms (±3%)
21	70	1080
27	80	1101
32	90	1122
38	100	1143
43	110	1164
49	120	1185
54	130	1206
60	140	1226
66	150	1247
71	160	1268
77	170	1289
82	180	1309
88	190	1330
93	200	1350
99	210	1371
104	220	1391
110	230	1412
116	240	1432
121	250	1453
127	260	1473
132	270	1493
138	280	1514
143	290	1534
149	300	1554
154	310	1574
160	320	1594
166	330	1614
171	340	1634
177	350	1654
182	360	1674
188	370	1694
193	380	1714
199	390	1734
204	400	1754

HIGH EFFICIENCY DECATHLON SERIES GAS FRYERS
CHAPTER 2: PARTS LIST

2.1 High Efficiency Decathlon (HD) Primary Components



Parts are labeled to indicate the appropriate fryer model ("HD", "SCFHD", or "FPHD65"). If a part is not labeled, it can be used on any of these models. Each section is labeled by size (e.g., D50) and parts are not interchangeable between different sized fryers.

Some SCFHD fryers use Common Cabinet configurations and these parts are labeled "SCFHD C/C;" otherwise, use "SCFHD"-labeled parts when an "SCFHD C/C" part is not indicated. To determine if the SCFHD fryer utilizes Common Cabinet configuration, examine the door handles. A curved flat metal handle (Item 25, Section 2.1.2) indicates Common Cabinet configuration; a wireform handle (Item 24, Section 2.1.2) indicates a unit that does not have a Common Cabinet configuration. If you have any questions, call the Frymaster and Dean 24-Hour Service Hotline, 1-800-551-8633.

2.1.1 Decathlon HD50 Primary Components (includes SCFHD units)

ITEM	PART #	COMPONENT
1	823-6138	Frypot - S/S (SCFHD; with insulation: 106-6157)
*	823-5743	Frypot - S/S (Single HD without filtration; with insulation: 106-6614)
2	810-2130	Manifold, Gas
3	►►►	**See Orifices, Section 2.2**
4	810-2032	Pilot Burner, Natural/G20/25 Gas
*	810-2155	Pilot Burner, LP/G31 Gas
*	106-1839SP	Pilot Assembly, Natural Gas Electronic Ignition with Computer
*	106-1238SP	Pilot Assembly, Natural Gas Electronic Ignition without Computer
*	810-0705	Tube, ¼" x 20" Pilot Gas Supply (one-piece gasline)
*	810-0703	Tube, ¼" x 17½" Pilot Gas Supply (one-piece gasline)
5	220-1231	Bracket, Manifold Support (right or left)
6	230-1342	Diffuser Assembly
7	►►►	**See Drain Manifold Components, Section 2.5**
8	810-2785	Burner, High Efficiency
9	200-9063	Burner Heat Shield
10	807-3552	Gas Valve, Natural Gas Electronic Ignition, 24 VAC
*	807-3628	Gas Valve, LP Gas Electronic Ignition, 24 VAC
*	807-3294	Gas Valve, Natural Gas, Constant Pilot, 24 VAC
*	807-3295	Gas Valve, LP Gas, Constant Pilot, 24 VAC
*	807-2091	Gas Valve, G20/G25 Gas, 24 VAC (CE only)
*	807-2127	Gas Valve, G31 Gas, 24 VAC (CE only)
*	810-0691	Vent Tube
11	200-1148	Channel, Front and Rear (Single, SCFHD50 C/C)
*	823-5823	Channel, Front Base (2-battery, SCFHD50 C/C)
*	220-0890	Channel, Front Base (3-battery, SCFHD50 C/C)
*	220-1335	Channel, Rear Base (2-battery, SCFHD50 C/C)
*	220-1372	Channel, Rear Base (3-battery, SCFHD50 C/C)
*	220-2422	Channel, Rear Base (5-battery/4-battery with matching cabinet, SCFHD50 C/C)
*	106-5901	Base Assembly (2-battery, SCFHD50 C/C)
*	106-7622	Base Assembly (5-battery/4-battery with matching cabinet, SCFHD50 C/C)
12	823-5346	Hinge, Lower Left
*	823-5347	Hinge, Lower Right
13	823-5348	Hinge, Upper Left
*	823-5349	Hinge, Upper Right
*	823-4894	Hinge, Lower Left (SCFHD50 C/C)
*	823-4895	Hinge, Lower Right (SCFHD50 C/C)
*	823-5136	Hinge, Upper Left (SCFHD50 C/C)
*	823-5137	Hinge, Upper Right (SCFHD50 C/C)
14	211-2787	Side Panel, Left Side
15	212-2787SP	Side Panel, Right Side

* Not illustrated.

2.1.1 Decathlon HD50 Primary Components (includes SCFHD units) (cont.)

ITEM	PART #	COMPONENT
*	231-2060	Side Panel, Left Side (SCFHD50 C/C)
*	232-2060	Side Panel, Right Side (SCFHD50 C/C)
16	200-1674	Back Panel, Lower
*	200-3183	Back Panel (2-battery)
*	200-3567	Back Panel (3-battery)
17	823-5303	Wireway, Control Panel
18	►►►	**See Control Panel Options, Joiner Strips, and Accessories, Section 2.3**
19	824-1103	Top Cap, Single
*	824-0937	Top Cap, Double
*	106-5955	Top Cap, Double (SCFHD50 C/C)
*	824-0983	Top Cap, Triple
20	106-3720	Flue Box Assembly
*	200-6269	Shield, Flue Heat
*	200-6268	Front, Flue Box
*	200-6270	Rear, Flue Box
21	823-3521	Flue Cap (Single)
*	823-3634	Flue Cap (Double)
*	106-6777	Flue Cap (Triple)
*	200-1682	Bracket, Flue Mounting
22	106-4727SP	Door Assembly, Left
*	106-4728	Door Assembly, Right
*	210-8946	Panel, Outer Door, Left/Right
*	201-8945	Panel, Inner Door, Left
23	106-7542	Door Assembly (SCFHD50 C/C)
*	230-2256	Panel, Outer Door
*	220-2259	Panel, Inner Liner
24	810-0180	Handle, Door, Wireform
25	210-8077	Handle, Door, Common Cabinet
*	810-1105	Magnetic Catch, Door
*	803-0271	Basket, Twin
*	803-0099	Basket, Full
26	803-0277	Grid Assembly, Fine Mesh
27	210-1595	Hanger, Basket, Single System, (attaches to flue)
*	210-3131	Hanger, Basket, Double System (attaches to flue)
28	810-0356	Caster, Plate-mount, 5-inch without Brake
29	810-0357	Caster, Plate-mount, 5-inch with Brake
*	826-1117	Caster Kit (includes 810-0356 and hardware x1)
*	826-1118	Caster Kit (includes 810-0357 and hardware x1)
30	812-1226SP	Drain Nipple, Extended 1¼" " Drain (Single)
*	812-1717SP	Drain Nipple, Extended 1½" Drain
*	807-0154	Cordset, 10' Power
31	210-2804	Cover, Outlet Duct
32	810-2411	Leg, Single Bolt Mount (black)
*	810-3169	Leg Package, 4 Bolt Mount (4 per set)
33	823-3248	Leg Support Assembly
34	200-8895	Burner Mounting Rail
35	220-0891	Brace, Front Horizontal, Single (SCFD C/C)
*	220-0882	Brace, Front Horizontal, Double (SCFD C/C)

* Not illustrated.

2.1.2 Decathlon HD60 Primary Components (includes SCFHD units)

ITEM	PART #	COMPONENT
1	823-4692	Frypot - S/S (SCFHD)
*	823-5742	Frypot - S/S (Single HD without filtration)
*	106-7853	Frypot - S/S (SCFHD63)
*	823-6314	Frypot - S/S (Single HD63 without filtration)
2	810-2072	Gas Manifold (weld assembly; *also used on HD63 fryers*)
3	►►►	**See Orifices, Section 2.2**
4	810-2032	Pilot Burner, Natural/G20/25 Gas
*	810-2155	Pilot Burner, LP/G31 Gas
*	106-1839SP	Pilot Assembly, Natural Gas Electronic Ignition with Computer
*	106-1238SP	Pilot Assembly, Natural Gas Electronic Ignition without Computer
*	810-0705	Tube, Pilot Gas Supply, ¼" x 23" (one-piece gasline)
*	810-0703	Tube, Pilot Gas Supply, ¼" x 17½" (one-piece gasline)
5	220-1231	Bracket, Manifold Support (right or left)
6	230-1431	Diffuser Assembly
7	►►►	**See Drain Manifold Components, Section 2.5**
8	810-2785	Burner, High Efficiency
9	200-1363	Heat Shield, Lower
*	200-8053	Heat Shield, Vessel
*	812-0211	Insulation, Kaowool Blanket, .5” x 7.5” x 17.5”
*	230-2057	Support, Burner
10	807-3552	Gas Valve, Natural Gas, Electronic Ignition, 24 VAC (¾" in, ½" out)
*	807-3628	Gas Valve, LP Gas, Electronic Ignition, 24 VAC
*	807-3294	Gas Valve, Natural Gas, Constant Pilot, 24 VAC
*	807-3295	Gas Valve, LP Gas, Constant Pilot, 24 VAC
*	807-2091	Gas Valve, G20/G25 Gas, 24 VAC (CE only)
*	807-2127	Gas Valve, G31 Gas, 24 VAC (CE only)
*	810-0691	Vent Tube
*	823-3347	Frame, Slide Base
11	220-2187	Channel, Rear and Front
*	200-3219	Channel, Base (Single and 3-battery)
*	200-1198	Channel, Base (2-, 3-, and 4-battery)
*	200-1463	Channel, Base (4-battery)
*	200-1393	Channel, Lower Joiner
*	823-5790	Channel, Base (Single, SCFHD60 C/C)
*	200-8095	Channel, Front Base (SCFHD60 C/C)
*	220-1339	Channel, Rear Base (3-battery, SCFHD60 C/C)
*	220-1362	Channel, Rear Base (4-battery, SCFHD60 C/C)
*	106-4424	Base Assembly (4-battery, SCFHD60 C/C)
*	106-5622	Base Assembly (3-battery, SCFHD60 C/C)
*	106-6643	Base Assembly, HD63
12	823-5346	Hinge, Lower Left
*	823-5347	Hinge, Lower Right
13	823-5348	Hinge, Upper Left
*	823-5349	Hinge, Upper Right
*	823-4894	Hinge, Lower Left (SCFHD50 C/C)
*	823-4895	Hinge, Lower Right (SCFHD50 C/C)
*	823-5136	Hinge, Upper Left (SCFHD50 C/C)
*	823-5137	Hinge, Upper Right (SCFHD50 C/C)

* Not illustrated.

2.1.2 Decathlon HD60 Primary Components (includes SCFHD units) (cont.)

ITEM	PART #	COMPONENT
14	211-4570	Side Panel, Left Side (unit exterior)
15	212-4570	Side Panel, Right Side (unit exterior)
*	201-4775	Side Panel, Left Side with Hole (unit interior)
*	202-4775	Side Panel, Right Side with Hole (unit interior)
*	211-5693	Side Panel, Left Side, Single (unit exterior)
*	212-5693	Side Panel, Right Side, Single (unit exterior)
*	231-2311	Side Panel, Left Side (unit exterior, SCFHD60 C/C)
*	232-2311	Side Panel, Right Side (unit exterior, SCFHD60 C/C)
*	231-2311	Side Panel, Left Side (unit exterior, HD63)
*	232-2311	Side Panel, Right Side (unit exterior, HD63)
*	201-1245	Panel, Inner Left (divider located over filter unit)
*	202-1245	Panel, Inner Right (divider located over filter unit)
*	201-4237	Panel, Inner Left (divider located over filter unit), Church's
*	202-4237	Panel, Inner Right (divider located over filter unit), Church's
16	200-1327	Back Panel, Lower (Single)
*	200-1222	Back Panel, Lower (Double)
*	200-4238	Back Panel, Lower (Church's Double)
*	200-1213	Back Panel, Upper (Single)
17	824-1195	Wireway, Control Panel
18	►►►	**See Control Panel Options, Joiner Strips, and Accessories, Section 2.3**
19		**Top Cap**
*	824-0987	x1 (Single)
*	824-0937	x2 (2-battery)
*	824-0992	x3 (3-battery)
*	824-0960	x4 (4-battery)
*	106-6080	x3 (3-battery, SCFHD60 C/C)
*	106-4683	x4 (4-battery, SCFHD60 C/C)
*	106-5434	x1 (Single, HD63)
*	106-6080	x3 (3- and 6-battery, HD63)
*	106-4683	x4 (4- and 6-battery, HD63)
20	106-4375	Flue Box Assembly *(also used on HD63 fryers)*
*	200-8220	Front, Flue Box
*	200-8221	Back, Flue Box
*	200-8219	Shield, Flue Box
*	200-3649	Deflector, Flue (Single, HD, non-S/S) *(use screws 809-0437)*
*	210-6525	Deflector, Flue (Single, Chili's, S/S) *(use screws 809-0437)*
21	823-3635	Flue Cap (Single)
*	823-3516	Flue Cap (2-battery)
*	230-1850	Flue Cap *(HD63)*
22	106-4721	Door Assembly, Left
*	200-4794	Panel, Door, Inner
*	211-8935	Panel, Door, Outer
*	106-4722	Door Assembly, Right
*	200-4794	Panel, Door, Inner
*	212-8935	Panel, Door, Outer
23	106-4309	Door Assembly (SCFHD60 C/C)
*	200-8076	Panel, Door, Inner
*	210-8075	Panel, Door, Outer

* Not illustrated.

2.1.2 Decathlon HD60 Primary Components (includes SCFHD units) (cont.)

ITEM	PART #	COMPONENT
24	810-0180	Handle, Door, Wireform
25	210-8077	Handle, Door, Common Cabinet
*	810-1105	Magnet, Door
*	803-0304	Fry Basket, Twin
26	803-0149	Grid Assembly, Mesh
*	810-2235	Grid Assembly, Rack
27	210-2737SP	Basket Hanger, Single, no Splash Guard
*	823-4999	Basket Hanger, Chili's Double System, 6" Splash Guard
28	810-0356	Caster, Plate-mount 5" without Brake
*	810-2406	Caster, Single Stud-mount 5" without Brake
29	810-0357	Caster, Plate-mount 5" with Brake
*	810-2405	Caster, Single Stud Mount 5" with Brake
30	812-1226SP	Drain Nipple, Extended, 1 ¼"
*	812-1717SP	Drain Nipple, Extended, 1 ½"
*	106-0913SP	Cordset, 10' Power
31	210-9416	Cover, Outlet Duct
32	810-2411	Leg, Single Bolt Mount (black)
*	810-3169	Leg Package, 4 Bolt Mount (4 per set)
33	823-3248	Leg Support Assembly
34	200-8835	Burner Mounting Rail
*	200-2308	Post, Door
*	201-1182	Gusset, Side Panel Left
*	202-1182	Gusset, Side Panel Right
*	200-1611	Base, Cabinet
*	210-9416	Duct, Door Access
*	200-2713	Plate, Suction Manifold
*	210-1180	Insert, Suction Manifold
35	220-0891	Brace, Front Horizontal, Single (SCFD C/C)
*	220-0882	Brace, Front Horizontal, Double (SCFD C/C)

* Not illustrated.

2.1.3 Decathlon FPHD65 Primary Components

ITEM	PART #	COMPONENT
1	823-5243	Frypot - S/S
2	810-2072	Gas Manifold (weld assembly)
3	►►►	**See Orifices, Section 2.2**
4	810-2032	Pilot Burner, Natural/G20/25 Gas (primary and trailing, 120V)
*	810-2155	Pilot Burner, LP/G31 Gas (primary and trailing)
*	812-1674	Pilot Burner, Mod. Natural Gas (electronic ignition)
*	810-0705	Tube, Pilot Gas Supply, ¼" x 23" (one-piece gasline)
*	810-0703	Tube, Pilot Gas Supply, ¼" x 17½" (one-piece gasline)
5	220-1231	Bracket, Manifold Support (right or left)
6	230-1431	Diffuser Assembly
7	►►►	**See Drain Manifold Components, Section 2.5**
8	810-2785	Burner, High Efficiency
9	200-8748	Heat Shield, Lower
*	200-8053	Heat Shield, Vessel
*	230-2057	Support, Burner

* Not illustrated.

2.1.3 Decathlon FPHD65 Primary Components (cont.)

ITEM	PART #	COMPONENT
10	807-3552	Gas Valve, Natural Gas, Electronic Ignition, 24 VAC
*	807-3628	Gas Valve, LP Gas, Electronic Ignition, 24 VAC
*	807-3294	Gas Valve, Natural Gas, Constant Pilot, 24 VAC
*	807-3295	Gas Valve, LP Gas, Constant Pilot, 24 VAC
*	810-2156	Gas Valve, Natural Gas, 120 VAC
*	810-2323	Gas Valve, LP Gas, 120 VAC
*	807-2091	Gas Valve, G20/G25 Gas, 24 VAC (CE only)
*	807-2127	Gas Valve, G31 Gas, 24 VAC (CE only)
*	810-0691	Vent Tube
*	823-3347	Frame, Slide Base
11		**Channel, Base**
*	106-7441	265
*	106-7357	465
*	106-6851	565, 665
12	823-4894	Hinge, Lower Left
*	823-4895	Hinge, Lower Right
13	823-5136	Hinge, Upper Left
*	823-5137	Hinge, Upper Right
14	211-8078	Side Panel, Left Side (unit exterior)
15	212-8078	Side Panel, Right Side (unit exterior)
*	221-0012	Side Panel, Left Side with Hole (unit exterior)
*	222-0012	Side Panel, Right Side with Hole (unit exterior)
*	201-4237	Panel, Inner Left (divider located over filter unit)
*	202-4237	Panel, Inner Right (divider located over filter unit)
16		**Cabinet Upper Back**
*	220-2474	x1 (Single)
*	220-2353	x2 (2-, 4-, 5-, and 6-battery)
*	220-0668	x3 (5-battery)
*		**Cabinet Lower Back**
*	220-2483	x1 (Single)
*	220-2354	x2 (2-, 4-, 5-, and 6-battery)
*	220-0667	x3 (5-battery)
17	824-1195	Wireway, Control Panel
18	►►►	**See Control Panel Options, Joiner Strips, and Accessories, Section 2.3**
19		**Top Cap**
*	824-1781	x1 (for single)
*	823-6010	x2 (for 2-battery)
*	823-6011	x4 (for 4-battery)
*	823-6090	x3 (for 5-battery)
*	823-5975	x2 (for 5- and 6-battery)
*	823-5976	x4 (for 6-battery)
*	824-1656	x3, with work shelf
*	230-2472	x1, HD Marine
20	106-4375	Flue Box Assembly
*	200-8220	Front, Flue Box
*	200-8221	Back, Flue Box
*	200-8219	Shield, Flue Box
*	200-3649	Deflector, Flue (Single, HD, non-S/S) *(use screws 809-0437)*
*	210-6525	Deflector, Flue (Single, Chili's, S/S) *(use screws 809-0437)*

* Not illustrated.

2.1.3 Decathlon FPHD65 Primary Components (cont.)

ITEM	PART #	COMPONENT
21		Flue Cap
	230-2473	x1
	230-2298	x2
	230-2323	x3
	230-2344	x4
22	106-4309	Door Assembly, with Liner *(also used for HD63 fryers)*
*	200-8076	Panel, Door, Inner
*	210-8075	Panel, Door, Outer
23	n/a	Door Assembly (C/C)
24	210-8077	Handle, Door, Chrome
25	n/a	Handle, Common Cabinet
*	810-2346	Magnet, Door
*	803-0337	Fry Basket, 6 x 8¾" x 16¾"
26	803-0149	Grid Assembly, Mesh
*	810-2235	Grid Assembly, Rack
27	823-5859	Basket Hanger, Church's (with Deflector)
*	823-5801	Basket Hanger, Chili's Single System, 6" Splash Guard
*	823-5856	Splash Guard (2-, 4-, 5-, and 6-battery)
28	810-1494	Caster, Plate-mount 4" without Brake
29	810-2406	Caster, Plate-mount 5" without Brake
30	812-1226SP	Drain Nipple, Extended
*	807-0154	Cordset, 10' Power
31	210-9416	Cover, Outlet Duct
32	810-2411	Leg, Single Bolt Mount (black)
*	810-3169	Leg Package, 4 Bolt Mount (4 per set)
33	823-3248	Leg Support Assembly
34	200-8835	Burner Mounting Rail
*	200-8168	Post, Door
*	210-2804	Duct, Door Access

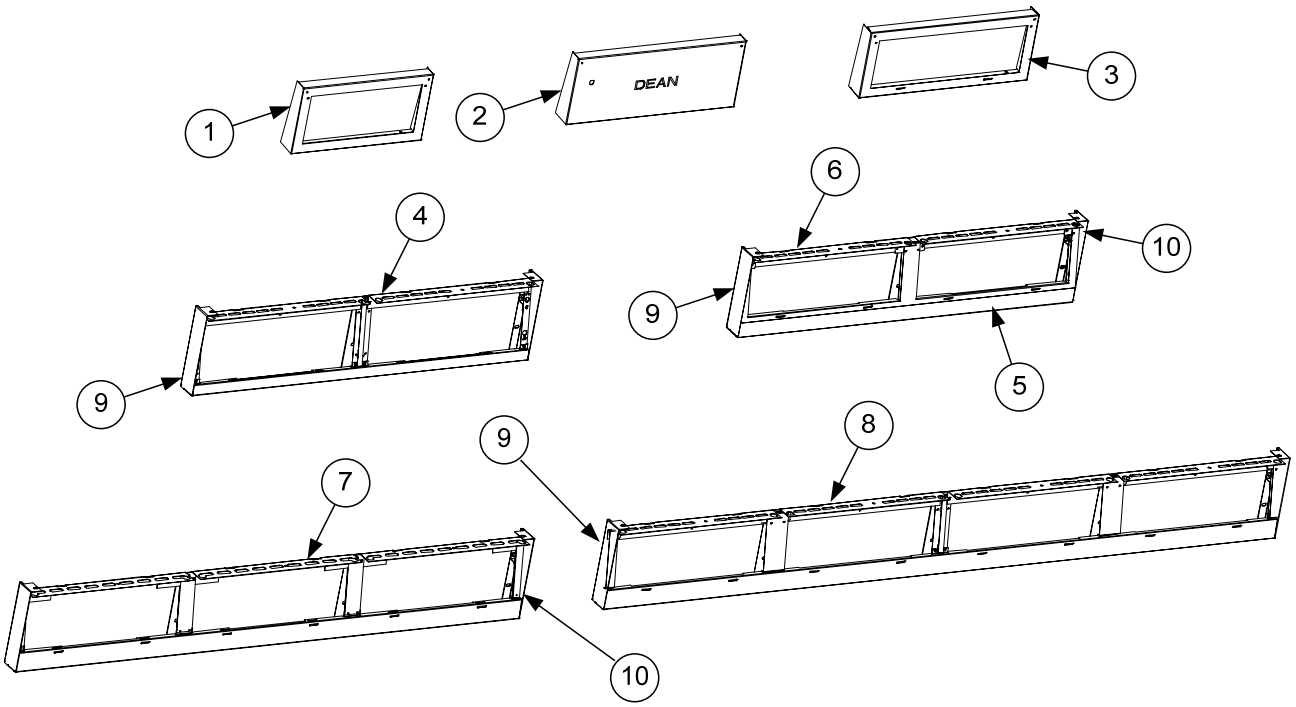
* Not illustrated.

2.2 Orifices

ITEM	PART #	COMPONENT
		Natural Orifices
*	810-2938	0-1999 ft.
*	810-3053	2000-3999 ft.
*	810-3054	4000-5999 ft.
*	810-3055	6000-7999 ft.
*	810-3056	8000-8999 ft.
*	810-3057	9000-10000 ft.
		Propane Orifices
*	810-2939	0-1999 ft.
*	810-3058	2000-3999 ft.
*	810-3059	4000-5999 ft.
*	810-3060	6000-7999 ft.
*	810-3061	8000-8999 ft.
*	810-3062	9000-10000 ft.

* Not illustrated.

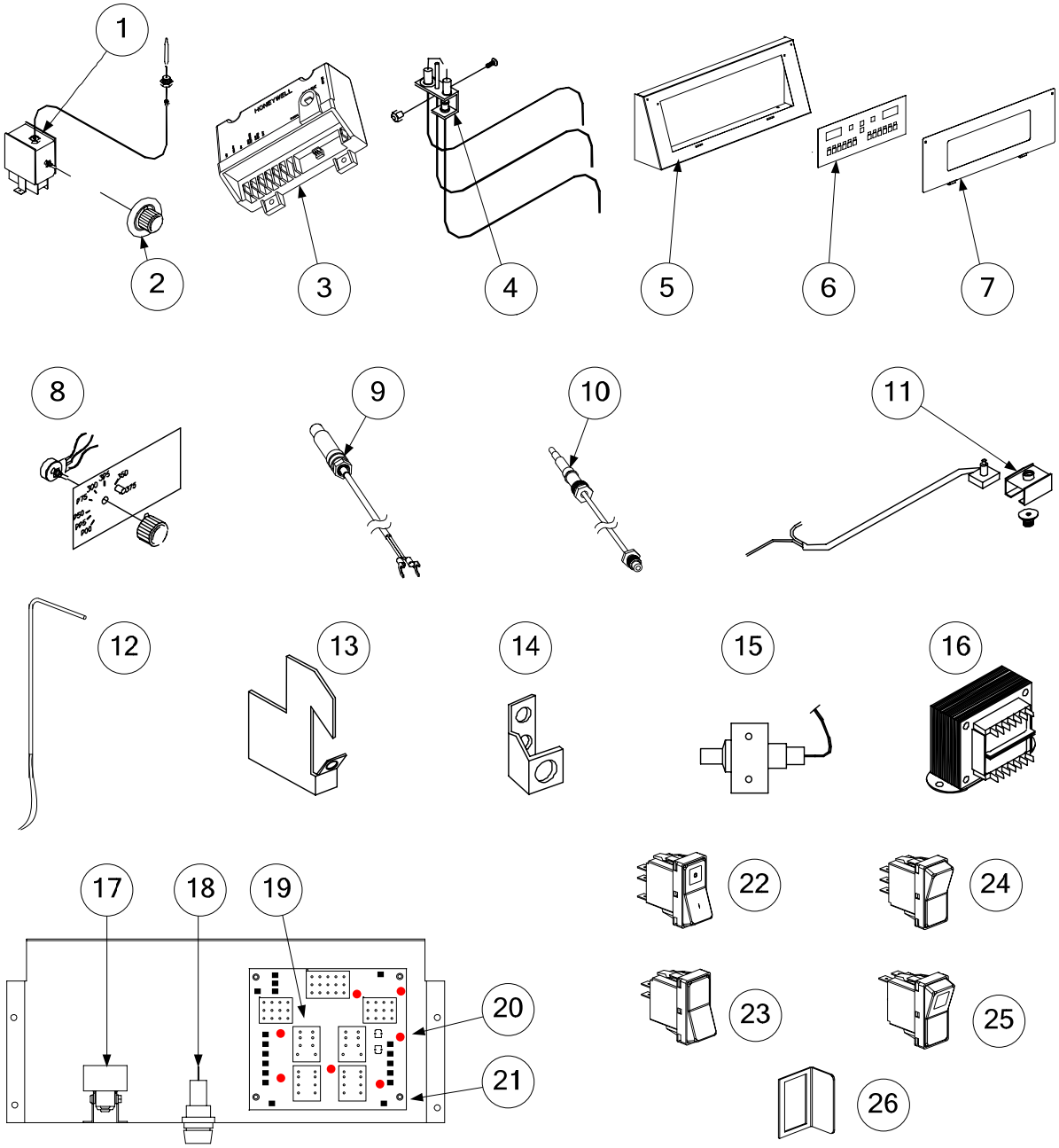
2.3 Control Panel Options, Joiner Strips, and Accessories



ITEM	PART #	COMPONENT
		Control Panels
1	210-3562	Controller, x1 (HD150, SCFHD456)
2	210-3021	Solid, with Indicator Light, x1 (SCFHD160, 260, 360, 460)
3	210-6405	Controller, x1 (HD60/SCFHD60)
4	106-7661	Controller, x2 (HD260)
5	230-2087	Controller, x2 (FPHD265/565/665)
6	200-8108	Vent, Computer (FPHD265/565/665; for use with Item 7)
7	106-5653	Controller, x3 (FPHD365/565)
8	106-7021	Controller, x4 (FPHD465)
9	211-6640	Frame End, Left (FPHD65, HD63)
10	212-6640	Frame End, Right (FPHD65, HD63)
*	106-6085	Controller, x3 (HD663 with matching cabinet)
*	106-4574	Controller, x4 (HD663 with matching cabinet)
		Joiner Strips
*	210-3017	HD60, SCFHD60, FPHD65
*	823-5961	FPHD565/665 (for use between two fryer banks)
*	823-5947	FPHD665 (for use within one fryer bank)
*	230-1465	SCFHD456
*	823-5932	SCFHD50
		Accessories
*	823-3938	Crumb Scoop, Split Pot
*	106-2631SP	Sediment Tray
*	823-3947	Chicken Crisper

* Not illustrated.

2.4 Optional Components and Controllers



ITEM	PART #	COMPONENT
1	826-2013	Thermostat, Sunne
2	810-2035	Knob, Thermostat
3	826-2117	Spark Module, Domestic and CE (Rajah Connector, 807-4375)
*	106-7535	Ignition Cable (for computer operated fryers)
4	807-1311	Pilot Assembly, Natural Gas with Electronic Ignition
*	807-1553	Pilot Assembly, LP Gas with Electronic Ignition
*	106-1839SP	Pilot Assembly (w/computer and electronic ignition), Natural
*	810-2155	Pilot Assembly (w/computer and electronic ignition), LP

* Not illustrated.

2.4 Optional Components and Controllers (cont.)

ITEM	PART #	COMPONENT
*	106-1238	Pilot Assembly (without computer), Natural
*	807-1310	Flame Sensor
*	803-0278	Brush, L-shaped
*	803-0197	Fryer's Friend
*	803-0293	Gloves (pair)
*	KIT00092	Air Shutter Kit
5	►►►	**See Control Panel Options, Joiner Strips, and Accessories, Section 2.3**
6		**Controllers**
*	106-7324SP	Computer, Compu-Fry III.5, Full-vat
*	106-7437SP	Generic Digital Controller
*	106-3028	Computer, CM4-S (Church's; with bezel)
*	106-5023	Computer, CM4-S (Popeye's)
*	106-2599	Basket Lift Timer
*	807-4199	Cable Assembly, Computer to Interface Board (SMT)
7		**Bezels**
*	823-3806	HD/SCFHD50
*	823-0768	SCFHD456
*	823-3776	SCFHD60
*	823-3433	FPHD65
*	230-0021	FPHD565 x2
*	230-0665	FPHD565 x3
8	826-2269	Potentiometer, Dean (without resistor)
*	826-2086	Kit, Thermatron, 115/230V
*	106-3729	24V Thermatron Board
*	816-0534	Knob, Thermatron Controller
*	210-5236	Face Plate, 3-switch, Thermatron
*	807-3580	Switch, Rocker Black, Thermatron
*	807-3579	Switch, 6 Prong, Thermatron
*	807-3576	Switch, Reset-Rocker, Thermatron
*	807-3575	Switch Hole Plug, Thermatron
9	807-3485	Thermopile
10	812-1284	Thermocouple (CE ONLY)
*	807-1026	Sound Device
11	106-1768SP	ECO Connector, Honeywell Valves Only (CE ONLY)
*	810-2398	ECO Connector, Robertshaw Valves Only (CE ONLY)
12	106-5419	Probe Assembly, Temperature (Thermatron)
*	826-2423	Probe Assembly, Temperature (Dean computer)
13	210-6564	Bracket, Pilot Thermocouple
14	810-2401	Bracket, Thermopile
15	810-1001	Piezo Igniter (trigger)
*	200-1868	Piezo Bracket
*	807-3540	Electrode, Piezo
*	807-3650	Lead Wire, Piezo
16	807-3551	Transformer, Honeywell 120/24 VAC (threaded mounting/electronic ignition)
*	807-0855	Transformer, 120/12 VAC
*	807-0800	Transformer, 120/24 VAC
*	807-1999	Transformer, Dual CE (CE ONLY, 208-240/12-24V)
17	807-3560	High-limit Thermostat, Manual Reset 410° F (CE)
*	807-3680	High-limit Thermostat, Manual Reset 450° F (NON-CE, 1998-present)

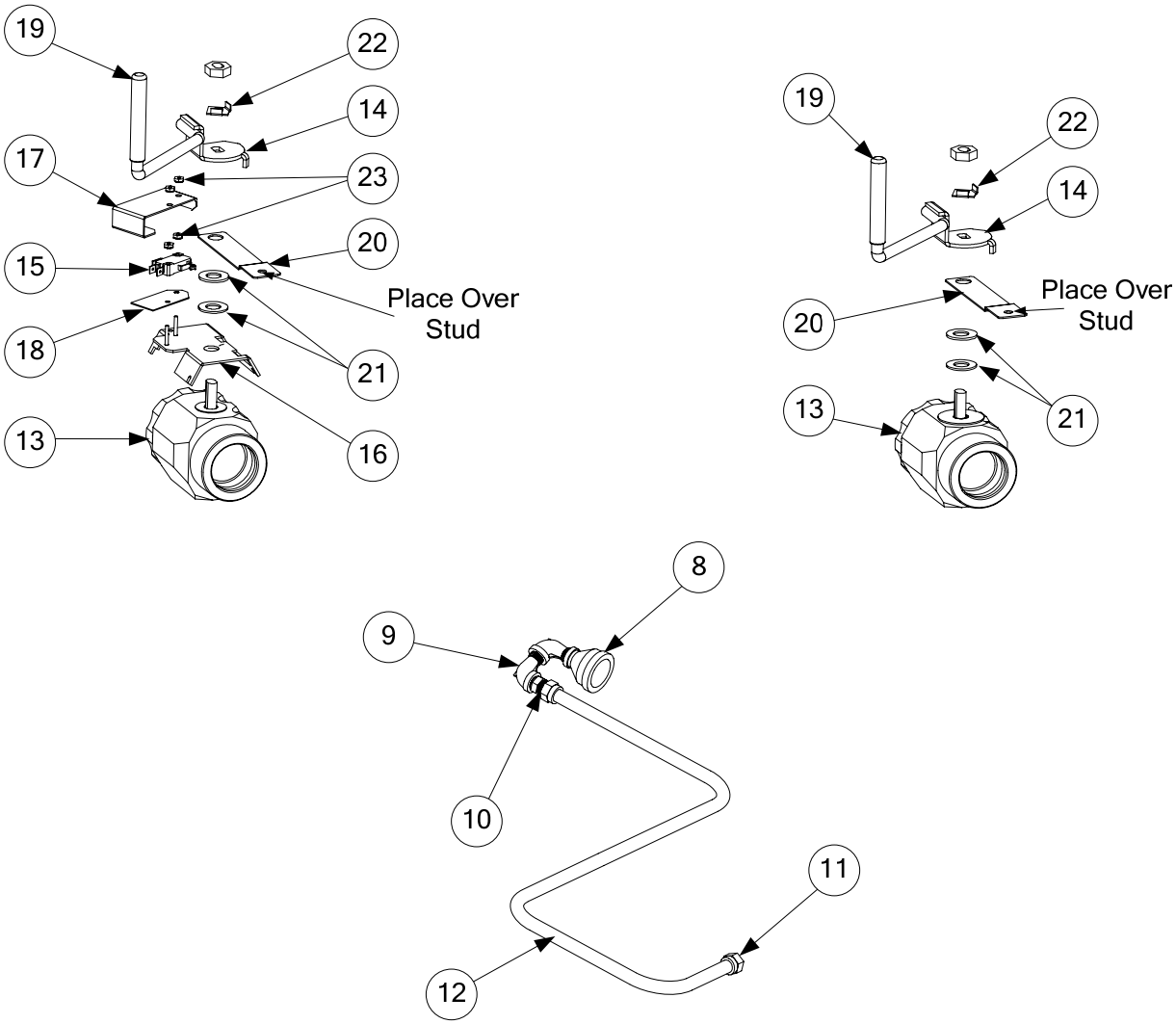
* Not illustrated.

2.4 Optional Components and Controllers (cont.)

ITEM	PART #	COMPONENT
*	807-3559	High-limit Thermostat, Manual Reset 435° F (pre-1998)
*	210-4628	Bracket, Frypot Sensors (requires tack welding to heat tube)
*	210-4629	Bracket, Frypot Computer Probe (requires tack welding to heat tube)
18	807-1321	Fuse Holder, Buss
*	2747	Fuse Holder, Slot-head, Safety (CE ONLY)
*	807-3592	Fuse 2A Slow-blow (230V systems)
*	807-3750	Fuse 5A (120V systems)
19		**Interface Boards**
*	106-6669	Constant Pilot
*	106-6710	Standing Pilot
20	807-0834	Relay, 12VDC 15A 1PDT (basket lift)
21	807-0833	Relay, 12VDC 5A 1PDT (latching)
*	807-4114	Relay, 24VAC Coil, Reset
22	807-3574	Switch, Power (green lens)
23	807-3580	Switch, Rocker, Manual Filter Power
24	807-3579	Switch, Six-terminal Boil-out
25	807-3576	Switch, Fryer Reset (momentary)
26	210-2786	Switch Guard (for Items 22-25, optional)
*	807-3578	Switch, 3-position, ON-OFF-ON
*	807-3592	Fuse, 2A, Slow Blow
*	807-3577	Circuit Breaker, 7 amp
*	807-3582	Indicator Light, Green
*	807-3581	Indicator Light, Red
*	106-1414	Pump Relay
*	807-3575	Switch Insert, Blank
*	106-2625	Basket Lift Timer, 120V, 60 Hz

* Not illustrated.

2.5 3” Oil Drain Manifold, Drain Flush, and Drain Valve Components

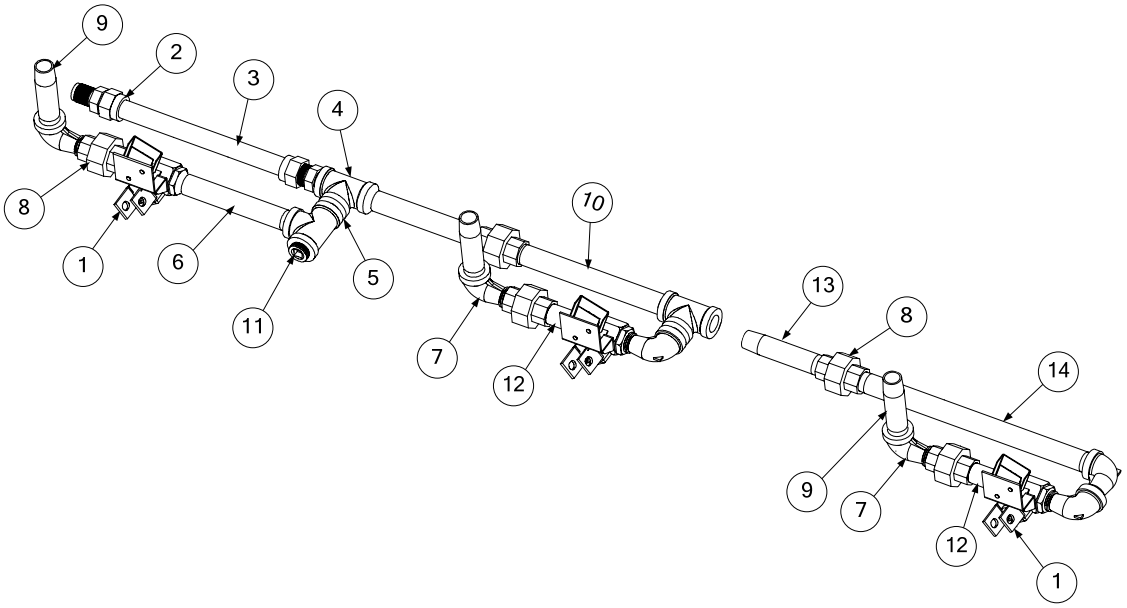


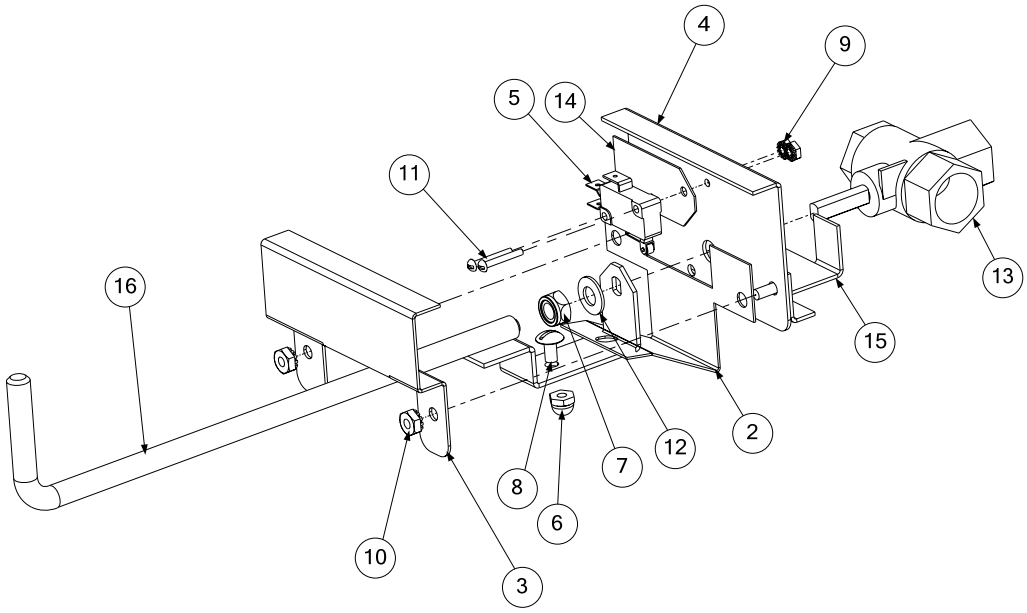
2.5 3" Oil Drain Manifold, Drain Flush, and Drain Valve Components (cont.)

ITEM	PART #	COMPONENT
1	823-5880	Drain Tube, Down Spout/Center Dump (SCFHD50)
*	823-5968	Drain Tube, Down Spout/Center Dump (FPHD65)
*	823-5881	Drain Tube, Down Spout/Center Dump (SCFHD60/80)
*	812-1802	Clamp, Down Spout Location
*	220-0873	Bracket, Drain Tube Location
2	823-4680	Drain Tube, Left (SCFHD50/60/80)
*	823-4844	Drain Tube, Left (SCFHD60)
3	823-4681	Drain Tube, Right (SCFHD50/60/80)
*	200-9365	Drain Tube, Right, Filter (FPHD65)
*	823-5188	Drain Tube, Right, Filter (SCFHD50/60/80)
4	200-6751	Drain Tube, Joiner (SCFHD50)
5	823-4682	Drain Tube, Joiner (SCFHD50/60/80)
6	809-0969	Clamp, T-bolt
7	816-0625	Boot/Sleeve
*	106-2568SP	Wash Down Hose Assembly (includes handle and nozzle)
*	106-1837SP	Quick Disconnect, Female, with ½" collar
*	813-0699	Quick Disconnect, Male, ½"
*	810-1434	Hose Assembly, 66", with both ends ½" NPT
*	106-1454SP	Nozzle Assembly, with handle
*	106-2387	Heater Strip 120V, 25W, 36", with 2-pin male connector
		Flush Oil Drain Line
8	813-0686	Bell Reducer, 1 ½" x ½"
9	813-0165	Elbow, Street ½" x ½" NPT 90° BM
10	810-1669	Adapter, Female ⅝" O.D. x ½" Long
11	810-1668	Adapter, Male ⅝" O.D. x ½" Long
12	810-1056	Flexline, ⅝" O.D. x 52.5" Long
	106-3976	**Drain Valve Assembly, 1½" without Microswitch**
	106-3977	**Drain Valve Assembly, 1½" with Microswitch**
13	810-2783	Drain Valve, 1½" Full Port with O-ring
*	816-0544	O-ring Seal
14	823-4734	Handle, Drain Valve Rotating
15	807-2104	Microswitch, CE Micro-roller Lever
16	106-5511	Microswitch Bracket Assembly
17	220-0143	Guard, Drain Microswitch
18	816-0220	Insulation, RF Switch
19	816-0547	Cap, Red Vinyl for Handle
20	200-6116	Strap, 1½" (holds tube to valve via the stud)
21	809-0988	Washer, Drain Microswitch, Teflon
22	200-1257	Retainer, Drain Valve
23	826-1366	Nut, 4-40 Keps Hex w/External Teeth *(pkg. of 25)*
*	816-0665	Cap, Vinyl (one per clamp, covers T-bolt threads)

* Not illustrated.

2.6 Oil Return Manifold Components





2.6 Oil Return Manifold Components (cont.)

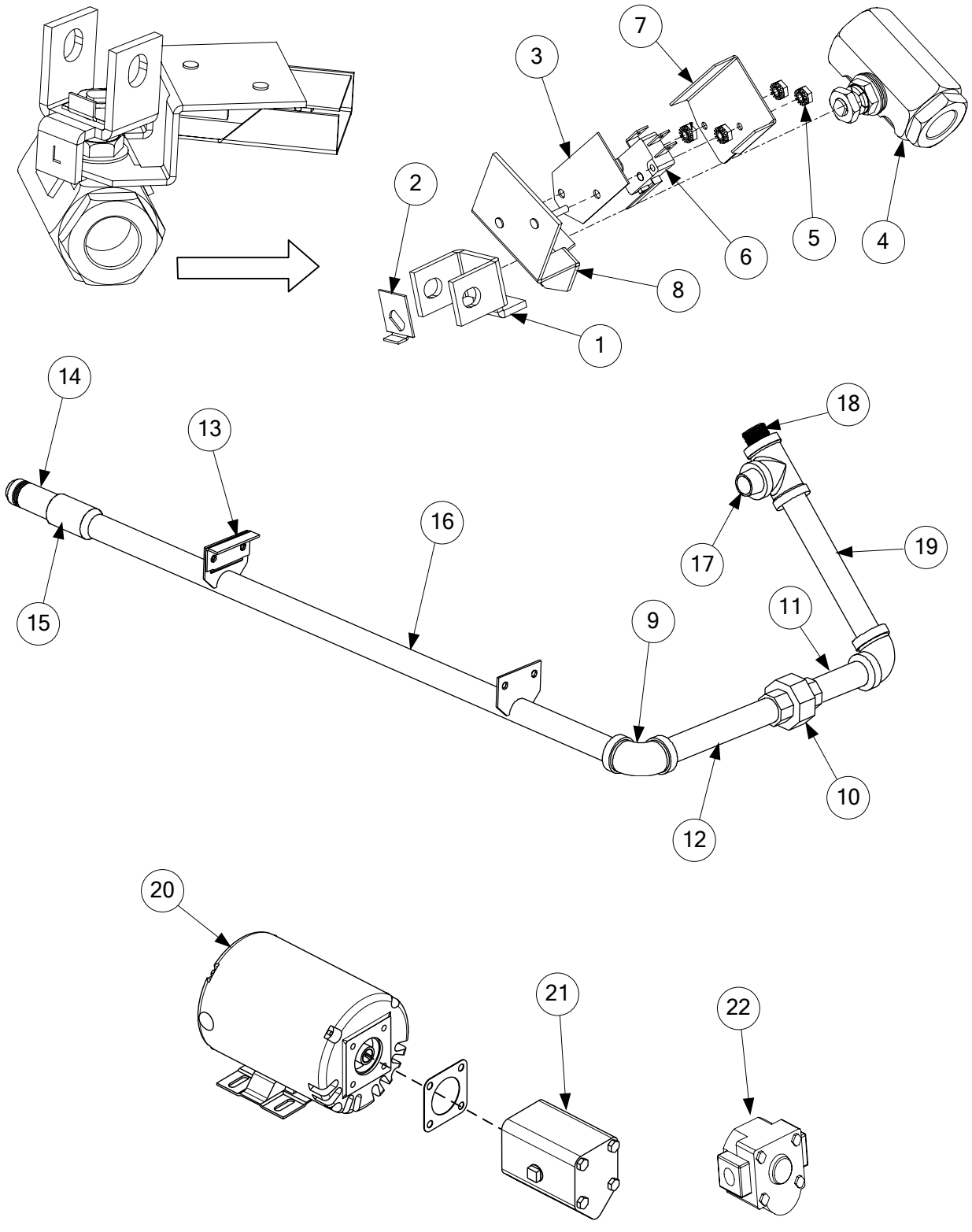
ITEM	PART #	COMPONENT
	106-4080	Oil Return Manifold, End (SCFHD50)
	106-5616	Oil Return Manifold (SCFHD250)
	106-4101	Oil Return Manifold, End (SCFHD60)
	KIT9342	Oil Return Manifold (SCFHD260)
	106-6468	Oil Return Manifold, #1 (FPHD)
	106-6469	Oil Return Manifold, #3 (FPHD)
	106-6471	Oil Return Manifold, #4 (FPHD)
	106-6470	Oil Return Manifold, #1, #2, #5, #6 (FPHD)
	106-5499	Oil Return Manifold, Chili's (SCFHD460)
1	106-4006SP	Valve Assembly, ½" Oil Return (see Section 2.7)
*	106-3997	Valve Assembly (use with wand)
	106-6797	Valve Assembly, 3-way Oil Return, Over-the-Top (FPHD, non-C/C)
2	210-9643	Spring Clip
3	210-9915	Cover, Dean Oil Return Microswitch
4	210-9916	Support, Dean Microswitch Mount
5	807-2104	Switch, CE Micro Roller Lever
6	809-0045	Nut, Cap 10-32 Hex
7	809-0056	Nut, 5/16-18 Hex
8	809-0117	Screw, 10-32 x 3/8 Slotted Truss Head
9	809-0237	Nut, 4-40 Keps Hex w/ Extended Teeth
10	809-0256	Nut, Keps 10-32 Hex
11	809-0354	Screw, 4-40 x ¾ Round Head
12	809-0942	Washer, 5/16 Belleville, 18-8
13	810-1003	180°, 3-way Ball Valve
14	816-0220	Insulation, Switch
15	106-5229	Support, Oil Return Valve
16	823-5952	Handle, 3-way Valve (FPHD; FPHD565 uses 823-5363)
17	810-1668	Adapter, Male ⅝" OD x ½"
18	810-1067	Flexline, 8.5" Oil Return
*	810-1055	Flexline, 11.5" Oil Return
*	810-1056	Flexline, 52.5" Oil Return
*	810-1069	Flexline, 29.50" Oil Return
19	813-0003	Tee, ½" x ½" x ½" BM
20	813-0022	Nipple, ½" x Close NPT BM
21	813-0099	Nipple, ½" x 7.00" NPT BM
22	813-0165	Elbow, Street ½" x ½" NPT 90° BM
23	813-0173	Union, ½" NPT
24	813-0247	Nipple, ½" x 3.50" NPT BM
25	813-0362	Nipple, ½" NPT x 7.50" BM
26	813-0463	Plug, ½" Counter Sink
27	813-0661	Nipple, ½" x 2.25" NPT BM
28	813-0654	Nipple, ½" x 4.00" NPT BM
29	813-0597	Nipple, ½" x 11.50" NPT BM
*	813-0062	Elbow, ½", 90° BM
*	813-0087	Nipple, ½" x 1.50" NPT BM
*	813-0460	Nipple, ½" x 3.00" NPT BM
*	813-0672	Nipple, ½" x 8.00" NPT BM
*	813-0607	Nipple, ½" x 23.5" NPT BM
*	813-0646	Nipple, ½" x 5.00" NPT BM
*	813-0373	Nipple, ½" x 11.00" NPT BM

2.6 Oil Return Manifold Components (cont.)

ITEM	PART #	COMPONENT
*	813-0298	Nipple, ½" x 2.00" NPT BM
*	813-0098	Nipple, ½" x 6.50" NPT BM
*	813-0265	Nipple, ½" x 2.50" NPT BM
*	813-0093	Nipple, ½" x 4.00" NPT BM
*	813-0281	Nipple, ½" x 5.00" NPT BM
*	813-0368	Nipple, ½" x 16.00" NPT BM
*	813-0698	Nipple, ½" x 10.5" NPT BM

* Not illustrated.

2.7 Oil Return and Oil Flush Components



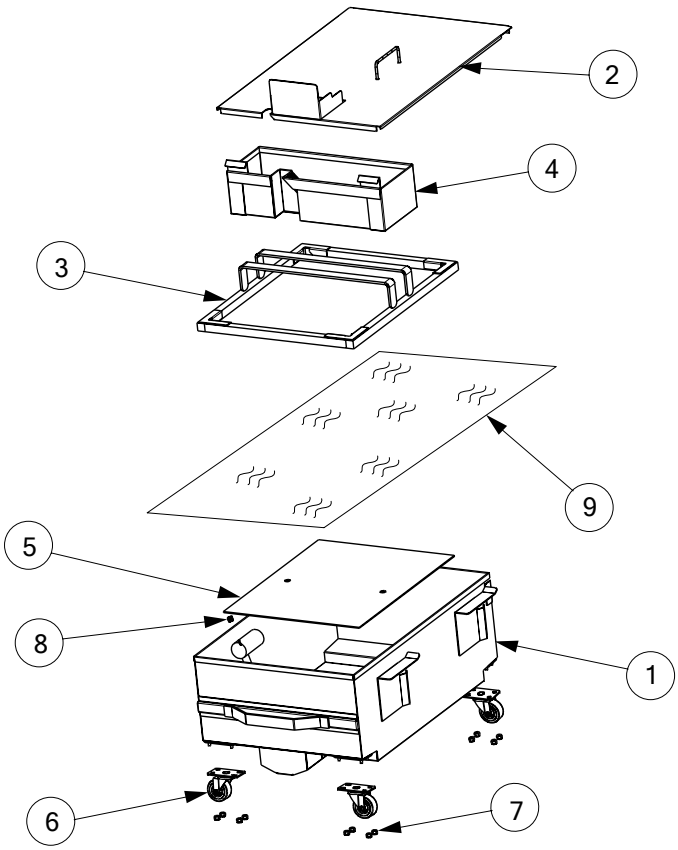
2.7 Oil Return and Oil Flush Components (cont.)

ITEM	PART #	COMPONENT
	106-4006SP	**Microswitch Bracket Assembly, Oil Return**
1	901-2772	Handle, RF Left
2	900-2935	Retainer, Nut
3	816-0220	Insulation, RF Switch
4	810-0278	Ball Valve, ½" Oil Return
5	826-1366	Nut, 4-40 Keps Hex w/External Teeth (pkg. of 25)
6	807-2103	Microswitch, Straight Lever (CE)
7	200-6806	Cover, Safety Switch
8	106-3962	Bracket Assembly, RF Switch
		Oil Suction Assembly
9	813-0062	Elbow, 90° BM
10	813-0173	Union, ½" NPT 150# BM
11	813-0654	Nipple, TBE ½" NPT x 4" Black
12	813-0674	Nipple, TBE ½" NPT x 7¼" Black
13	200-1230	Bracket, Front Male Manifold
	106-0774SP	**Suction Manifold Assembly**
14	810-0697	Disconnect, Male Suction Tube
*	826-1392	O-rings, for Male Disconnect *(pack of 5)*
15	813-0608	Coupling, ½" NPT BM Full
16	823-3188	Suction Manifold
	106-0858	**Oil Suction Start Fitting**
17	813-0022	Nipple, ½" NPT x Close
18	813-0463	Plug, ½" Counter Sink
19	813-0003	Tee, ½" NPT BM
*	210-8790	Bracket, Oil Return/Flush Retainer
*	200-8929	Handle, Oil Return
*	200-9850	Handle, Oil Return (Application Series “DF” fryers)
*	816-0638	Cap, Oil Return Handle, Yellow
*	816-0637	Cap, Oil Return Handle, Blue
		Pump and Motor
20	807-3859	Motor (HD50/60 C/C, HD63, FPHD65)
*	810-2100	Motor (HD50/60, non-C/C)
21	810-3071	Pump, 8GPM (Viking, C/C)
22	810-2098	Pump, 8GPM (Dean, non-C/C)
*	810-2716	Pump, 2-piece 4GPM (Viking, HD56)

* Not illustrated.

2.8 Filtration Components

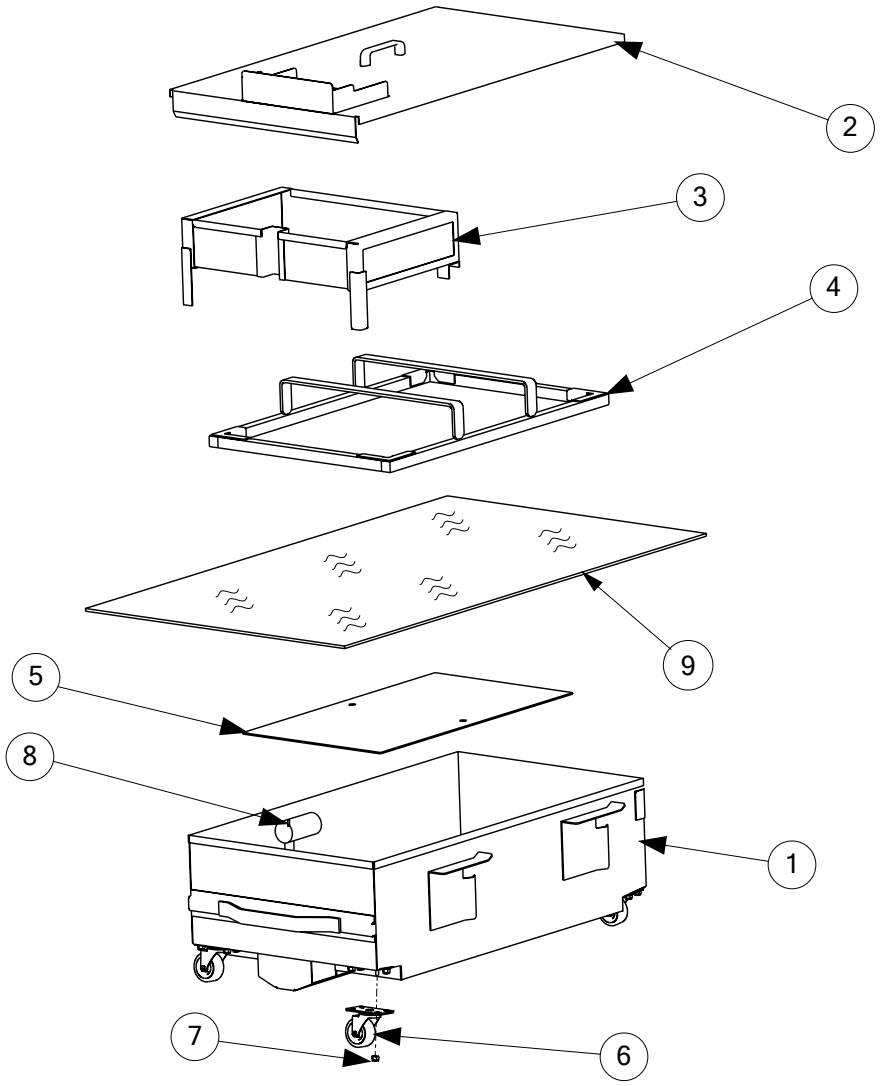
2.8.1 Filtration Components; SCFHD50 Series Fryers



ITEM	PART #	DESCRIPTION
	106-5144SP	Filter Pan Assembly (includes Items 1-8)
1	823-4841	Filter Pan
2	823-5639	Lid, Filter Pan
3	823-3573	Ring, Hold Down
4	823-5191	Crumb Basket
5	200-8003	Screen, Sana Grid
6	810-2805	Caster, 2”
7	809-0823	Nut, Nylock, ¼-20
8	813-0568	Pipe Plug, 1/8 NPT Socket-head
9	803-0170	Filter Paper, 16.5” x 25.75” *(100 sheets per box)*

* Not illustrated.

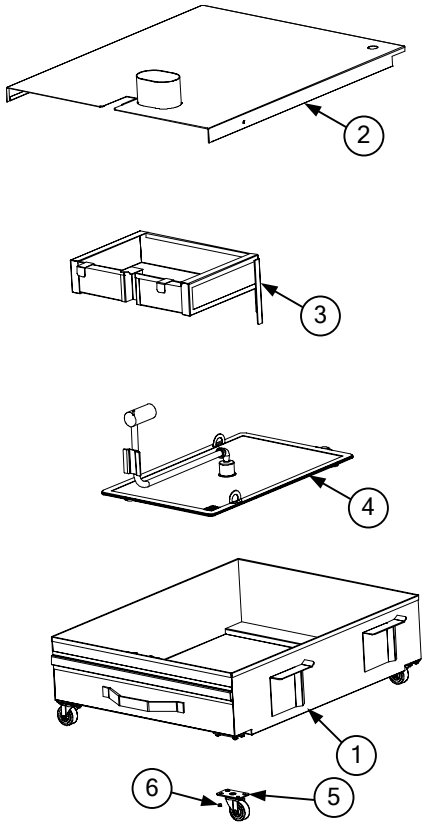
2.8.2 Filtration Components; SCFHD60 and SCFHD63 Series Fryers



ITEM	PART #	COMPONENT
	106-7543	Filter Pan Assembly (includes Items 1-8)
1	823-6001	Filter Pan
2	106-4725	Lid Assembly
3	823-6018	Crumb Basket
4	823-3361	Hold Down Ring
5	200-5726	Screen, Bottom Filter
6	810-2805	Caster, 2”
7	809-0823	Nut, ¼-20 Hex S/S
8	813-0568	Pipe Plug, ⅛" NPT Socket Head
9	803-0289	Filter Paper, 22” x 34” *(100 sheets; 803-0266, 25 sheets)*

* Not illustrated.

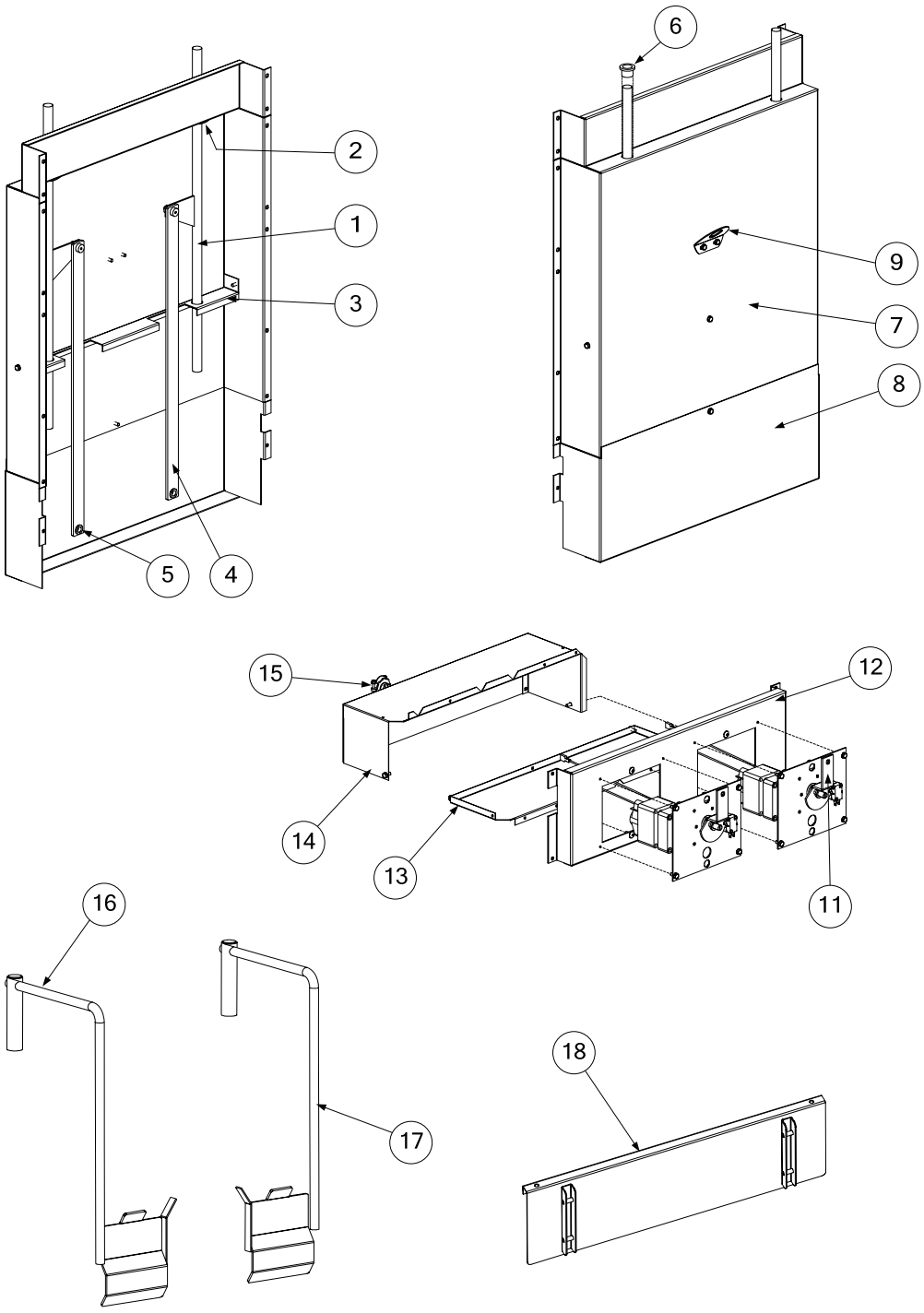
2.8.3 Filtration Components; FPHD65 Series Fryers



ITEM	PART #	COMPONENT
	106-5081	Filter Pan Assembly (includes Items 1, 3-6)
1	823-5258	Filter Pan
2	823-5857	Lid Assembly
3	823-5851	Crumb Basket
4	106-6466	Filter Leaf and Tube
5	810-2805	Caster, 2”
6	809-0070	Nut, ¼-20 Hex S/S

* Not illustrated.

2.9 Basket Lift Components

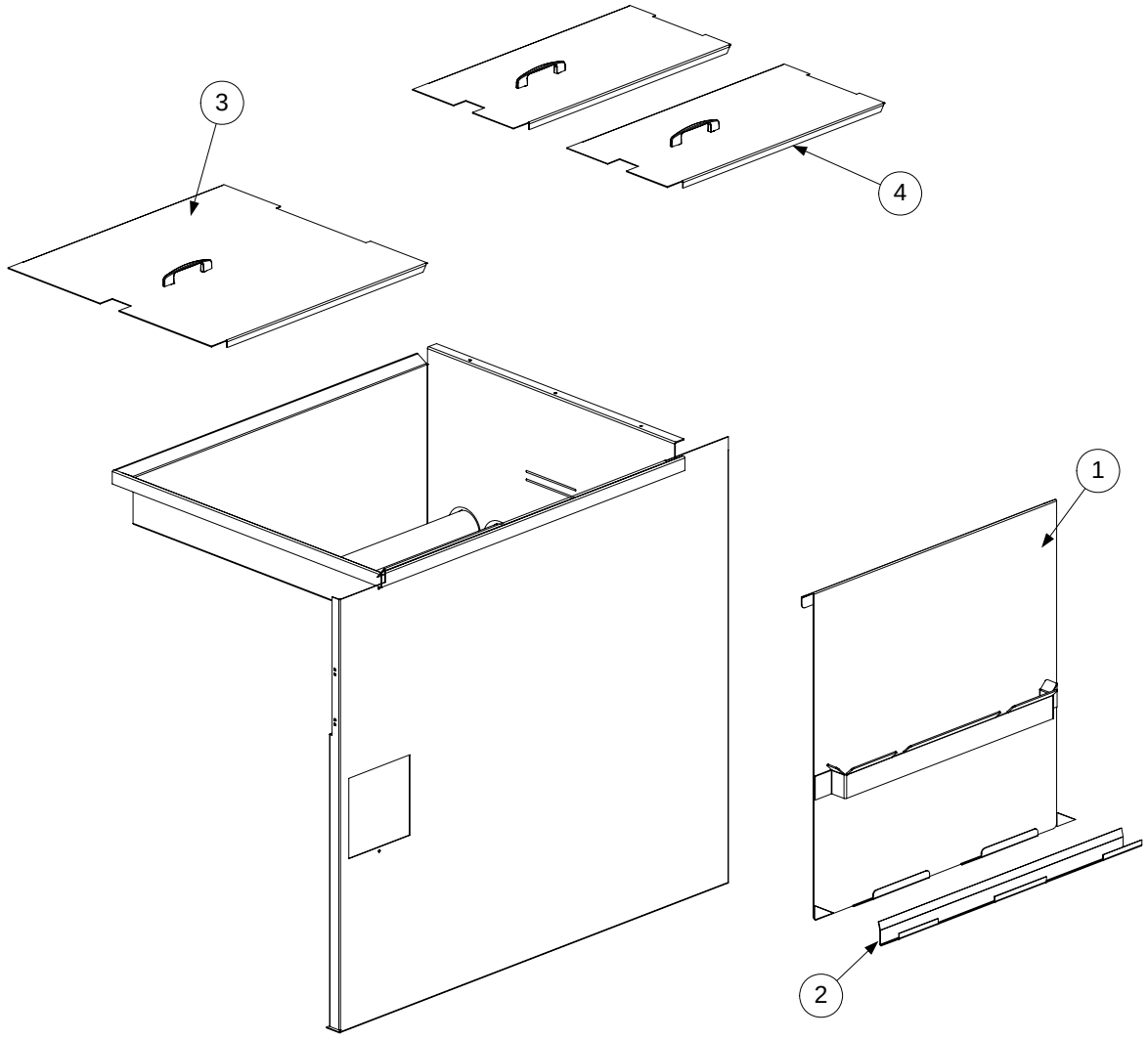


2.9 Basket Lift Components (cont.)

ITEM	PART #	COMPONENT
	106-1870	Basket Lift Assembly (HD60)
1	823-3625	Basket Lift
2	809-0082	Truarc Ring, 3/4"
3	200-2735	Channel, Support Autolift
4	200-2069	Member, Lift Control Arm
5	810-2140	Bushing (Oiltite) 3/8" x 1/2"
6	813-0035	Bushing (Bronze), .641/.640 ID
7	824-0958	Back, Basket Lift Motor (D60)
8	824-0959	Cover, Basket Lift Motor (D60)
9	200-1376	Bracket, Restraining
10	106-1463	Motor Assembly
*	200-1693	Plate, Motor Mounting
*	807-0107	Gear Motor
*	807-2104	Microswitch, CE Roller
*	807-3546	Bushing, Heyco, 750-625 (3/4")
*	810-2144	Spacer, Aluminum, 1/4" OD x 3/8" L, #4-40
11	823-3626	Switch, Limit Cam
		Motor Housing
12	200-2736	Housing, Front
13	200-2739	Housing, Bottom
14	200-2364	Housing, Back
15	807-0140	Connector, 3/8"
16	823-5904	Left Basket Lift Arm
17	823-5905	Right Basket Lift Arm
18	823-3500	Basket Lift Guide Plate (HD60)

* Not illustrated.

2.10 Trough, Holster, & Cover Components



ITEM	PART #	COMPONENT
1	106-2668SP	Holster Assembly, Vat Cover
2	823-3384	Trough, Holster Assembly
*	106-1637SP	Cover, Full-vat (HD50)
3	106-1447SP	Cover, Full-vat (HD60)
4	106-2585SP	Cover, Split-vat (HD60)
*	106-2897SP	Cover (FPHD65)
*	106-6494	Cover (HD56)
*	810-0180	Handle, Vat Cover (Full- and Split-)
*	823-4767	Splash Guard
*	803-0278	L-shaped Brush
*	803-0197	Fryer's Friend
*	823-3938	Crumb Scoop

* Not illustrated.

2.11 Fasteners (Screws, Nuts, Bolts)

ITEM	PART #	COMPONENT
*	809-0842	Nut, 4-40 Nylock
*	809-0417	Nut, Flange 1/4-20 Serrated
*	809-0766	Nut, Keps 10-32 SS Hex
*	826-1366	Nut, 4-40 Keps Hex w/External Teeth (pkg. of 25)
*	809-0247	Nut, Nylock, #4-40
*	809-0842	Nut, 8-32 Hex Keps (Zinc Plated)
*	809-0863	Nut, Nylock, 5/16"-18 Hex
*	809-0169	Screw, #12 x 3/4" Hex Washer Slotted Head
*	809-0428	Screw, 1/4-20 x 1/2" Hex Head
*	826-1389	Screw, 1/4-20 x 3/4" Hex Head (pkg. of 10)
*	809-0918	Screw, 10-24 x 1/2" Slotted Head
*	809-0845	Screw, 10-32 x 3/8" Hex Slotted Head
*	809-0846	Screw, 4-40 x 1"
*	809-0918	Screw, 8-32 x 3/8" Round Slotted Head
*	809-0167	Screw, Sheet Metal 10 A x 5/8 B
*	809-0434	Screw, #10 x 3/8" Hex Washer Head
*	809-0907	Screw, .375 x 1/2" Shoulder
*	826-1379	Screw, #10 x 1/2" Phillips Truss Head (pkg. of 10)
*	809-0962	Screw, 8-32 x 1-3/8" Phillips Truss Head
*	809-0997	Washer, 1/2 SAE "N" S/S
*	809-0191	Washer, 1/4" Spring-lock

* Not illustrated.

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PRINTED IN THE UNITED STATES

819-6314
MAY 2007